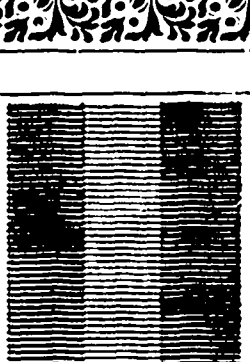
The O.A.C. Review



COLLEGE COLORS

Christmas Number

PUBLISHED BY THE STUDENTS OF THE

Ontario Agricultural College

GUELPH

TORONTO:

THE J. E. BRYANT COMPANY, LTD.

1893

ONTARIO AGRICULTURAL COLLEGE.

The O.A.C. Review

THE DIGNITY OF A CALLING IS ITS UTILITY

VOL. V. ONTARIO AGRICULTURAL COLLEGE, GUELPH, DECEMBER, 1893. No. 3.

EDITORIAL.

WE have much pleasure in herewith presenting our friends and readers with the first special Christmas number of THE REVIEW ever issued. When one of the members of our staff first gave expression to the idea that we should do something of this kind, in honor of the season and our beloved institution, several of our wisest heads regarded the proposal with wonder and amazement. Soon, however, their wonder gave place to the thought that perhaps, after all, there might be something worth considering in the scheme. Then, realizing that "his praise is lost who stays till all commend," every man of them, from managing editor down to the irrepressible "devil," threw himself with all his energy into the laudable work of preparing a Christmas number which was to eclipse all previous productions in the same line from any of our American colleges.

HON. JOHN DRYDEN.

To you, kind reader, it is left to decide what measure of success has crowned our efforts in your behalf. Deal gently with us; be not too critical, remembering that several of our number are seriously affected with the much-dreaded "exam.-preparation" trouble. We hope, however, to see them all next term, again clothed and in their right mind, when the worry of exams. and special numbers shall have been numbered among the recollections of a dead and gone past.

***

THANKSGIVING DAY, with all its transient earthly joys of roast turkey, cranberry sauce, and plum pudding, has come and gone. When it was here we were thankful that it came once a year; but when it had gone many a student, especially those of the lean and hungry "freshy" type, was deeply and humbly thankful that once a year was as often as it did come. It is well, however, that the results were not even more serious. There were no fatalities recorded, although some came very near the valley of the shadow. Alas! will men never be taught that nature's laws cannot be broken with impunity?

***

IT appears now as if the season of outdoor sports had come to an end for this year. Football has ceased to lure its devotees from the ardorous dissection of zoology and veterinary notes. No more does the melodious sound of the referee's whistle add to our carefully selected collection of noises on the campus.

Our teams were fairly successful in the several games they played, and are to be congratulated on the very favorable results of the season's work. We expect that when they come forth next spring, after their long winter's rest, they will not be behind their predecessors in adding to the athletic honors of our college.

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WE have much pleasure in presenting our readers with the accompanying excellent portraits of the Hon. John Dryden, Minister of Agriculture, and President Mills. With both of these gentlemen students and ex-students are already so familiar, either by personal acquaintance or through public report, that no formal introduction is necessary. Both are laboring zealously in the cause of scientific agriculture in Ontario: the Minister's seat of operations being the floor of the Provincial House, while the President's energies are directed towards the, sometimes apparently fruitless, task of developing embryo thoughts in the minds of O.A.C. students.

***

BEFORE this number reaches our friends, we shall all be once more thrown into joyous preparation for the glad Christmas time. So silently and swiftly does old Father Time mow away the days and weeks that, almost before we can realize

it, the dim and distant future has become the real and living present.

The past year, like preceding ones, has brought to each of us our share of joys and sorrows. We have met with trials and difficulties: we have tasted of the sweets of success; perhaps some of us have been called upon to part with a dear friend, a father, a sister, or a brother, and now mourn

"For the touch of a vanished hand,
And the sound of a voice that is still."

* * *

But, taking the bitter with the sweet, we think any one of us will acknowledge that, after all, we might have lived in worse days than those of the year of grace of '93. And as we each of us set our faces towards the portals of the coming year, which looks so bright in the distance, shall we not each resolve that at least some of our mistakes of '93 shall not be recorded with those of '94?

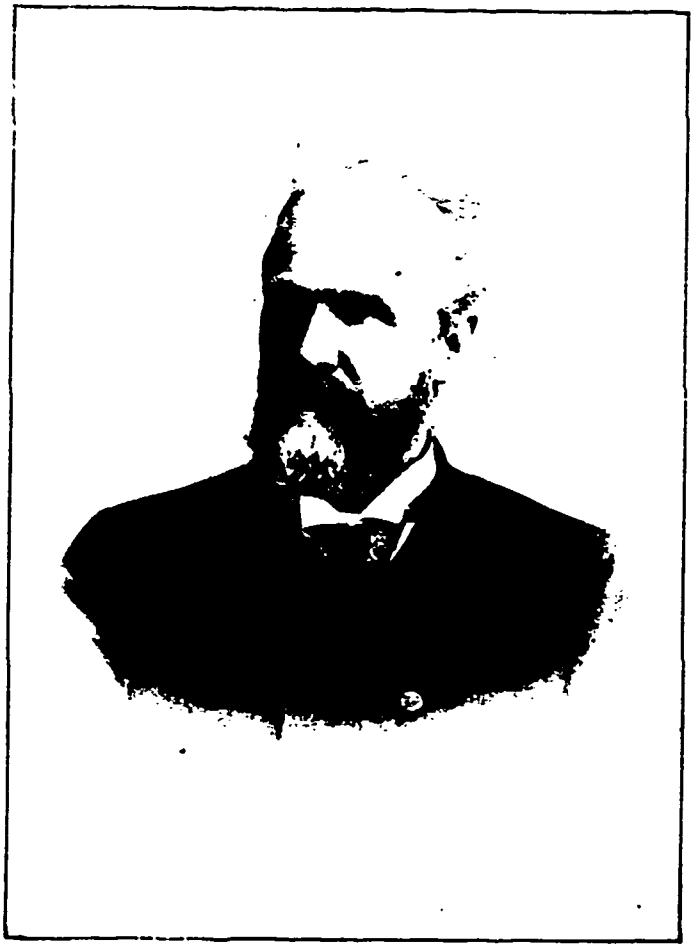
May we remember that there is a work for each of us to do, ready to our hand: and, remembering this, may we strive day by day to press on, endeavoring to make present activity atone for past idleness and neglect. And let us try to welcome the new year, with its unknown joys and cares, in the same spirit which filled the sweet singer, so lately gone, when he wrote:

"Ring out the old, ring in the new,
Ring, happy bells, across the snow:
The year is going, let him go;
Ring out the false, ring in the true.

"Ring in the valiant man, and free,
The larger heart, the kindlier hand;
Ring out the darkness of the land,
Ring in the Christ that is to be."

* * *

And now all that remains for The Review to do, and we do it most heartily, is to wish our many thousands of friends and readers a very Merry Christmas and a Happy, Happy New Year.



President Mills.

AGRICULTURAL COLLEGES.

By President Mills.

The intelligence of people has much to do with their prosperity. The value of general education is admitted on all hands: and there is a growing demand for special industrial training as an equipment for life's duties and responsibilities.

Technical education at public expense is objected to by many on the ground that no class in the community has a right to have special instruction, adapted to its peculiar wants, provided at the expense of the whole people, and we must admit that this objection is based on a sound economic principle; but there are exceptions to most rules, and by common consent it is agreed that agriculture, especially in an agricultural country, has such a relation to other industries and employments that whatever tends to make agriculturists more intelligent and successful workers is a benefit not only to them, but to all other classes of people. On this assumption agricultural colleges have been founded and maintained at public expense in Europe, Asia, and America.

Prior to 1862, the Michigan Agricultural College was the only institution of the kind on this continent. In that year a large amount of the public lands of the United States was set apart for the purpose of founding and maintaining such colleges. This Act is known as the Congressional Land Grant of 1862, whereby the Federal Government gave to every State and Territory in the Union 30,000 acres of public land for each representative which it had in Congress at that time. The money obtained for this land was used, or supposed to be used, to found and maintain "colleges for the benefit of agriculture and the mechanic arts."

The number of agricultural schools and colleges in the United States at the present time is about fifty—twenty-seven or twenty-eight independent colleges of agriculture, and twenty-two or twenty-three Departments of Agriculture in state universities. It is impossible to give the exact number, because the statistics at our disposal do not in some cases distinguish clearly between colleges and experiment stations.

The object aimed at in the founding of agricultural colleges was undoubtedly the education of boys for farming: but the attendance at the great majority of purely agricultural

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The clock hath stricken the hour for study. Is it thus, O First Year man, with such discordant noises, thou drownest nature's sweet and kindly voice, and jarrest the peaceful quiet of that sacred hour? King.

Professor of dairying lecturing to first year, and remarking on the uncleanly and disorderly way in which many engage in dairying. "It would take numerous professors, three or four travelling dairies, and several Ontario Governments, to make some persons good butter makers;—and then they would turn out failures."

"REVIEW" STAFF.

J. Buchanan (Personals), W. J. Brown (Exchange), J. W. Wright, B.S.A. (Local), G. A. Robertson (Local),
L. J. Stringham (Agricultural), L. L. Fergusson (Managing), Wm. McCartney (Asst. Managing), L. B. Spohn (Athletic),
F. Calderhead (Sec.-Treas.), L. A. Stevenson (Business Manager), W. A. Kennedy (Business Manager).

institutions has been much less than was anticipated by their founders. No inducements that money can provide have been found sufficient to draw large numbers of agricultural students. Hence most of the American agricultural colleges furnish instruction, not only in agriculture and the sciences closely related thereto, but in the main branches of a general education. In too many cases the latter have overshadowed the former, and the primary aim has been, to a large extent, lost sight of. In Ontario we have clung tenaciously to the original idea of educating young men for the farm. Our course is purely agricultural and intensely practical: and on the these lines we have been fairly successful. By widening our course, we might have increased the number of our students: but I doubt whether we should thereby have done so valuable a work for the country.

The causes of the comparatively small attendance at agricultural colleges are no doubt various, and we shall mention only three or four: (1) A widespread feeling that a farmer does not need much education, arising to some extent from the fact that on the virgin soils of this continent many farmers have done well without any special preparation for their work; (2) the conviction amongst farmers that the money spent in educating a boy for farming is not likely to be a very profitable investment that it may even prove a hindrance, by giving him a distaste for farm work and life; (3) the fact that, with a good general or professional education, a young man may enter the ministry, commence teaching, or begin the practise of law, medicine, dentistry, etc., with little or no capital, while the boy who takes a course at an agricultural college must have a farm, in addition to his education, before he can commence work with a fair prospect of success. (4) the fact that farmers do not make money so *quickly* as men in many other occupations. These are, we think, the principal reasons why young men do not seek the halls of our agricultural colleges in such numbers as might be expected: and it will take some time to remove the misapprehensions which exist under these heads.

In this short article we cannot do more than state that,

notwithstanding these misapprehensions, the agricultural colleges are doing a good work; and our experience proves that young men may be educated without acquiring a distaste for farm life or work. With a thoroughly practical curriculum, faithfully carried out, the course at an agricultural college has just the opposite effect. It not only makes a young man a more intelligent and successful worker, but has a tendency to inspire him with a love for agriculture as one of the most independent, honorable, and desirable occupations.

Difficulties arise in the management and work of all colleges: but there are some which, at the present time, seem peculiar to agricultural colleges. The first of these is the very meagre and defective elementary education possessed by many of those who apply for admission to agricultural colleges. Farmers give time and opportunity for a thorough public and high school training to those of their sons who are preparing to enter the university or any of the professional schools; but the one who makes up his mind to remain on the farm has to work the greater part of the time, to the utter neglect of even the fundamental branches of a public school education. A very considerable number of those who intend to be farmers are in this condition; and the difficulty of teaching such young men in our agricultural colleges is very great, especially when they have to take lectures in the same classes with students of much higher educational attainments. Another difficulty peculiar to agricultural colleges is the labor question. If practical farm work be neglected by students at an agricultural college, the sure result will be a distaste for such work, such as we find amongst students of high schools and arts or professional colleges. Agricultural colleges must not neglect their course of apprenticeship; and the difficulty is to find suitable work at certain seasons of the year; and to manage matters so as to make it of real benefit to the students, without too large an expenditure for the labor of superintendence. I merely mention these difficulties; and hope to have an opportunity of discussing them at some future time.

Natural History Department of the O.A.C.

In consenting to write this article describing the building in connection with the Department of Natural History, I do so with pleasure, hoping that it will be read by many students who have not been here for several years, and have little idea of the great advancement that has been made in many of the departments in connection with the college.

I have in my mind the names of many students whom I met when I entered upon work at the college in 1878, and the great crowd that since then have taken the course without enjoying many of the privileges of those who are students to-day. In the early history of the college, there appeared but one department, and all others were merely adjuncts. Very little was spent for equipment in teaching Chemistry, Botany, Zoology, and Entomology; even the Library was scantily supplied.

Agriculture alone received aid, but as time rolled on those in authority took a wider view of things, and began to emphasize other subjects of study. In 1878, when the writer was appointed upon the staff, he came as Professor of Science in general, and Chemistry in particular; a wide field for the most enthusiastic to wander over. Some three years passed before this extensive field was divided between two professors — the one of Natural History, the other of Chemistry.

In 1893 we see a further division of labor in the Natural History Department—a practical Horticulturist appointed to lecture on Horticulture, and an assistant added to work with the Professor of Natural History.

Three years ago an assistant was appointed to the Chemical department. So that we have now three departments with two assistants, where there was only one in 1878.

This has resulted from a greater demand for a knowledge of agricultural science, and a desire for a course more strictly horticultural than in former years. We find students are now appearing who wish to give their time largely to horticulture, and graduate as specialists in that department. This could not be accomplished in the former course; but may now be reached, and no doubt will be a well-attended course in the near future.

My duty now is to place before you ex-students a description of the beautiful building erected in 1892 and set apart for the study of Botany, Zoology, and Horticulture. It is one of the most unique buildings on the college campus, symmetrical in its proportions and very attractive in its appearance. Why it was made to face the barn will be a problem for posterity to solve.

I know of no better way, within the limited time at my disposal, this busiest month of the year, than just to imagine I have a lot of you at my side, and that we start out from the college front door, proceed to the building, and wander from room to room for inspection.

We pass along in front of the main college building, cross the road, you remember, that passed south of the Veterinary class room; keeping right on we pass on the left the commodious and well-equipped Chemical Laboratory; a few yards farther, located on the same side, we pass the magnificent Convocation Hall and Gymnasium; ten yards farther on our right we reach the object of our visit.

We enter the front door, as I said before, facing eastward, and find ourselves in a large room, 50x36 feet. On the right-hand side, near the door, is a bedroom 24x11 feet; across from that is the office and room of the lecturer in Horticulture, 10x14 feet, with a room adjoining it 10x10 feet for holding pots. As we cross the large room, we notice a great table or platform in the centre with six vices: this is for practical instruction in grafting, etc. Almost any afternoon students can be seen at work here. Also near the centre of the room is a large four-sided structure reaching from the floor to the ceiling; this is an elevator by which plants are raised to the class room above.

We have crossed the large room and enter a door near the pot room referred to already. What a sight flashes upon us! We are looking into a grand conservatory 64x25 feet, with a wing to the right near midway 20x24 feet; the whole a mass of flowers; sixty-seven varieties of chrysanthemums in full bloom, geraniums innumerable; magnificent palms and monkey trees relieve the rich and dazzling colors of the flowers. In the centre is a large tank with varieties of water plants spread upon the water it contains.

Let us pause a moment in this beautiful house and think of the old greenhouse of former days -Mr. Barron stifled with smoke, as he issues from one of the old low glass-houses, where he has been slaughtering insect pests : or, in later days, Mr. Forsyth, faithful in the discharge of duty, not saying much, striving to do his best under adverse conditions, and hopeful of a day when the Deparament of Horticulture shall be better appreciated.

He has seen that day, but on its threshold failing health caused him to lay aside the implements of work and resign his position, to lead a life of greater ease.

Near the college he has built a beautiful house, a fitting rew rd for industry, integrity, and loyalty in his work ; and I know that all who have met him while a public servant here wish him many years to enjoy his attractive home. Let us walk around and return to the door we entered. A few feet and we are at the door leading into the Tropical House, 30x20 feet. Here you see the cotton plant and tobacco, bananas, orchids, and tropical ferns all growing luxuriantly. Many species are here which time will not permit to name ; beyond this house is another 34x20 feet, where the temperature is not so high ; at present it is filled with pinks and cinerarias.

We walk around it, re-enter the tropical with its close, damp atmosphere, pass out and go into the 4th house, 64x17 feet ; this contains plants about midway in their development. The 5th house is arranged for practical work, and will accommodate sixteen students. Each student has a space of eight feet allowed him ; here he places his pots and performs his operations.

This house and what follow open into a hall passing from the main room. The 6th house, 7x64 feet, is for propagating plants. Here slips are started in sand and developed till they find a position in the conservatory or the garden. No. 7 is a large house, 21x64 feet, used for forcing plants. At present you can see beautiful ripe tomatoes hanging upon the vines, beds of radishes and lettuce making rapid progress. The beds are arranged in tiers, the highest containing the tomatoes. If you have caught the spirit, you must feel that for the uses of practical horticulture the O.A.C. is splendidly equipped, and will soon rank second to none for teaching this popular subject. We retrace our steps along the hall, passing Nos. 6 and 5, and find ourselves in the large work room again. You will notice that a large table extends all the way from your right to the door we entered. Here and there you see piles of pots, prepared soil, and plants, with which some are working now. Immediately to your right are two doors, one leading into the room for spraying material, the other the implement room. Let us cross the floor and pass through the side door. We could pass from this outside, but we are not through inspection, as we have yet to go upstairs and examine that portion of the building set apart for the Department of Natural History. The small room, 21x7 feet, at the head of the stairs is used for displaying diagrams that have been used in the lecture room, and also for keeping specimens required for further use in lectures. From the landing at the head of the stairs we pass into the class room, 35x27 feet, in which the seats are arranged in six tiers, with two aisles ; the seats in the centre containing eight each, and those at the side four. The room is seated

Botanical Laboratory.

for ninety-six. In front of the class are two blackboards, with a large white space of 13 feet between, which serves as a screen when the stereopticon is used to illustrate. In the rear of the class at the wall are two large cylinders for containing gas used in connection with the stereopticon, and thus we can use either gas or oil when we wish to illustrate lectures with the lantern. The elevator referred to below lands at one end of the lecturer's desk, so that plants are readily brought up into the room, and as soon as done with lowered. Passing out of the class room at the opposite side from which we entered, we come into the room used for teaching microscopy. This is a long narrow room, seven feet wide, extending along one side the whole length 37 feet, and 12 feet on the other. Fifteen narrow windows, with one large one at the west side, supply light for the work. A table extends the whole way around, marked off into twenty divisions, one for each student. A fixed stool is in front of each division, and a drawer to the right for holding the student's microscope, etc.

In this class (third year) there is a microscope for each student, and other apparatus necessary for the study of this interesting subject. Along the wall behind the workers are special cases. No. 1 containing geological specimens: each drawer representing a formation and containing characteristic minerals or fossils. No. 2, insects, etc. No. 3, specimens of dried plants, with a collection of over 100 bottles of the seeds of weeds. No. 4 contains supplies used in microscopy. In one corner is an aquarium 3x4 feet, and across from it a sink and water supply. From this well equipped and convenient room you pass into the professor's private apartment, 23x10 feet: in one corner of this there is a larger work table, and shelves above for holding specimens, apparatus, etc. This room is on the front of the building and has a large window, which supplies ample light for the examination of specimens sent for identification.

Until 1887 very little of this kind of work was required; but since then the number of inquries have yearly increased, until now the table in front of the window is scarcely ever without some specimens under consideration. In this room you also see the instruments used for illustrating lectures by means of lantern slides, of which there are now several hundred in the collection arranged in groups, such as: those illustrating insects, beneficial and injurious: plant tissues: weeds: facts in geology: parasitic plants, etc. Our object is to have slides to illustrate, as far as possible, every subject. Besides these lantern slides, innumerable diagrams drawn on cloth are also kept on hand for illustration. To-day we appeal very much to the eye as well as to the *ear*. We have hundreds of slides containing microscopic objects which a few years ago we could only refer to, and not place them under the glass for examination. The addition of an assistant to this department has enabled us to add much to our means for illustration, and will yearly increase our number of microscopic and lantern slides, our diagrams, and other means employed to make the study of Zoology, Botany, and Geology simple, instructive, and popular.

My duty as a guide showing you through the building devoted to the Natural History Department is over, and I am sure you must be convinced that rapid strides have been made since you wandered through the halls of the college as a student of the O.A.C. We entered the professor's room by a door opening from the room for microscopy, but leave it by a room at the other side opposite the window, and find ourselves again in the class room at the door we entered it: through this we come to the head of the stairs, pass down, and, turning to the right, go out by the side door which faces the college: and here I bid you good-bye, and hope on some future occasion I may have the pleasure of showing you through these rooms in reality, instead of in imagination. J. HOYLES PANTON.

Public Speaking.

So much has already been said and written about public speaking that probably it is the height of presumption to attempt anything more on the subject. However, no serious harm can be done by jotting down a few general principles for beginners: and the indulgent reader (if, indeed, a reader can be found) will kindly assume his most amiable mood, and be very lenient toward the many shortcomings of this rambling paper.

The rules for public speaking are many. Pick up any work on the subject, and you will find it so full of instructions that the mind is apt to be confused; but the whole matter, boiled down, amounts to little more than the following:

1. Have something to say.
2. Say it to every man, woman, and child in the audience.
3. When you have said it, stop.

If you have nothing to say, then, for sweet pity's sake, keep your mouth as tightly closed as is consistent with your general health. It is rarely necessary for a speaker to occupy half an hour in telling his audience that he has nothing to say; they can usually be satisfactorily convinced of the fact in less than two minutes. Neither is it necessary, as a rule (outside of an insane asylum), that he should spend fifteen or twenty minutes in assuring his audience that he is not going to make a long speech; that it would not be advisable to make a long speech; that for ten or a dozen good and sufficient reasons, all duly specified, minutely described, and guaranteed genuine, it would be absolutely unwise to make a long speech—as a rule, we say, these things, important though they be, may be left to the intelligence of the audience. Besides, audiences, as a rule, are blessed with considerable fortitude: and if he should happen not to speak quite so long as they had expected, there is not, after all, any really serious danger that they will be inconsolable.

As regards the second rule, do not mumble what you have to say to a selected few within a radius of ten or twelve feet. No doubt your audience should be grateful for the privilege of gazing upon your noble countenance, but you must remember that the world is full of ungrateful people; and if some of your audience cannot hear, you may take it for granted that most of them will be unreasonable enough to feel dissatisfied.

Then, again, do not bawl at your audience. If it is your ambition to excel as a bawler, there is strong probability that you will meet with many humiliations, for the country is full of calves whom you can never hope to excel, while nine out of every ten worthy fishmongers will put to shame your mightiest

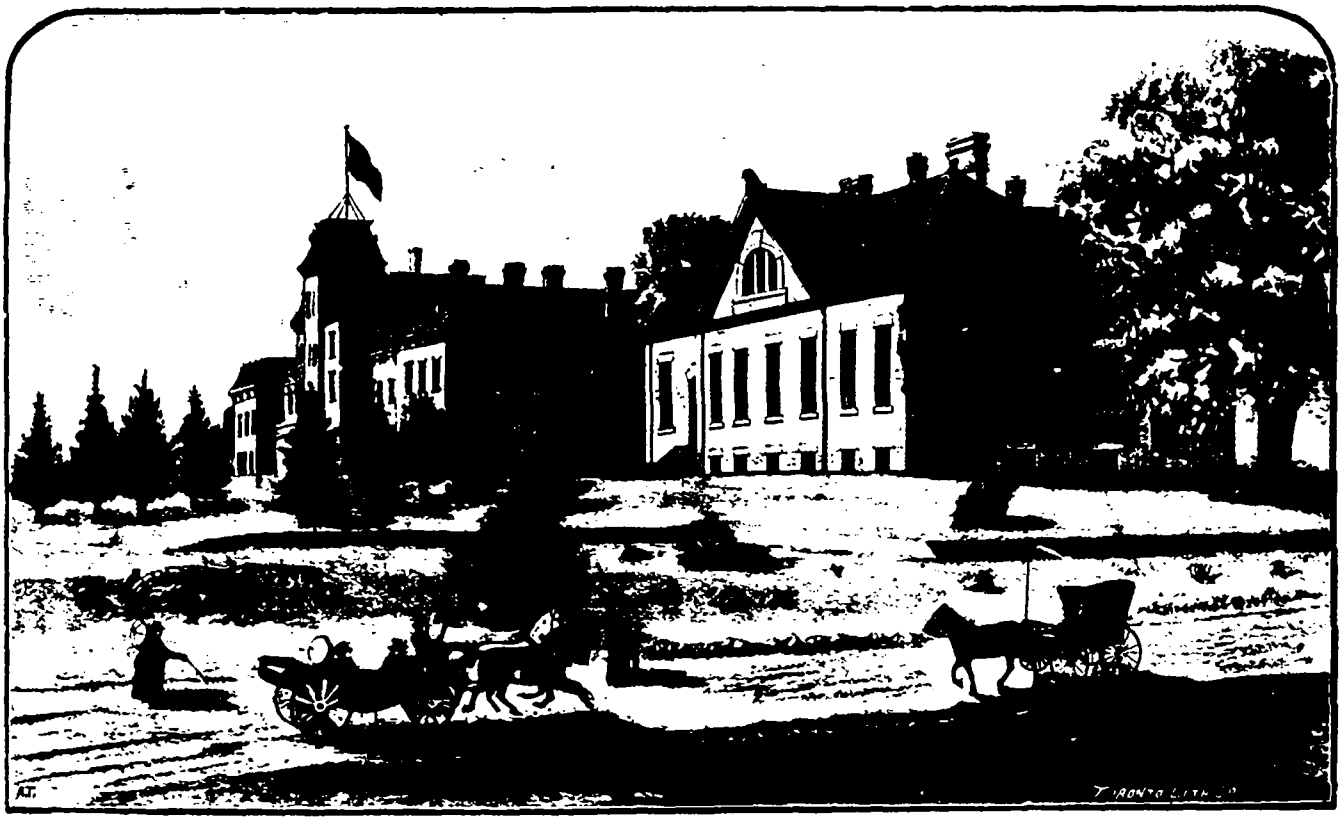
effort. Besides, bawling will make you red in the face, and make your throat feel as though it had been swept out with a wire brush, while your audience will drift further and further away, until the last link which bound them to you will part under the force of the wind-storm you have created.

Attitudes are dangerous things to tamper with. If you try to strike one, the chances are it will dodge and strike you instead. It will be much safer to leave attitudes to the stage.

Do not persuade yourself that a wailing, whining monotone constitutes eloquence. If such were the case, then it would be most unfortunate for the orator, as he would thus be brought into direct and hopeless competition with the faithful watchdog, who frequently relieves his overburdened soul by pouring his troubles into the sympathizing ear of the man in the moon. In short, act like a rational being, who is talking to other rational beings. Make up your mind that you have something that you want to say to your audience; then look the people straight in the face, and say it to them—not *at* them, nor all around them, but in all earnestness say it *to* them, and your hands and other parts of your anatomy will take care of themselves.

Then, when you have once said what you wished to say, stop. Do not try how often you can say the same thing. The experienced orator sometimes adds force by clothing the same idea in different words, but it is a dangerous device for the novice, and one that can be used but sparingly by the best of speakers. It is, no doubt, a very beautiful thought that Tennyson's "Brook" should "go on forever," but when a public speaker evinces this peculiarity there is more or less danger that his audience will fail to see anything poetic in the analogy.

Finally, do not flatter yourself that people in general are madly anxious to hear you talk, and that no public meeting can be a success unless you appear on the platform. It is highly probable that no one in the gathering would regard your non-appearance as a public calamity. If you are invited to speak upon any occasion, study the circumstance, and be sure you do not go beyond your allotted time. To know when to stop is half the secret of popularity in public speaking; and if you ever succeed in solving this difficult problem, many a long suffering unfortunate will call you blessed. G.E.D.



CHEMICAL LABORATORY.

Chemical Department.

The Chemical Laboratory, like the Botanical Laboratory and Convocation Hall, is built of white brick. It is situated about midway between the main college building and the Convocation Hall. These three buildings, in line, face to the southwest, commanding a beautiful view of the college campus. The interior of this building is well arranged. It is capacious, light, and warm. Upon entering, and to the left of the hall, is the private office of the Department of Chemistry. Here are found a chemical library, college reports, experiment station bulletins, etc., all of which are in daily use. Adjoining the office is the private analytical room, in which is kept a stock of chemicals, classified, and where analyses requiring special attention are conducted. A door from this room opens into the large lecture room, which has seating capacity for one hundred, and is provided with tables, blackboards, gas, water, etc., such as are found in all well-

furnished chemical class rooms. To the right of the hall, and convenient to this class room, is the students' analytical room. This contains six large laboratory tables, every one accommodating eight students. Forty-eight, therefore, can work together at practical chemistry. All these rooms are light, warm, and comfortable.

Instruction in chemistry is given to first, second, and third-year students. During the fall and winter terms the first year class receives, weekly, two lectures in elementary chemistry. The second year, through the fall term, receives two lectures a week in organic chemistry, and, through the winter and spring terms, three a week in agricultural chemistry. The third-year class, throughout its entire college year, receives two lectures, weekly, in general chemistry. This class also devotes three afternoons weekly to practical chemistry in the analytical room.

With few exceptions, the young men before entering have very little knowledge of chemistry. None have handled chemical apparatus. A text-book, "Remsen's Elementary Course," is used in the first year. The lectures are intended to demonstrate, simplify, explain, and impress upon the mind the lessons of this book. To illustrate, take the composition of water. The text-book states that water is composed of two elements, hydrogen and oxygen, and that the volume of the former is twice as great as that of the latter. Instead of requiring the students to accept and remember these statements, water is analyzed on the lecture table before the class: the hydrogen is collected in one tube, and the oxygen in another. These elements are then examined to satisfactorily demonstrate and prove the presence of each. Students thus know, as we know that snow is white, that water can be decomposed into two elements, hydrogen and oxygen, and that the volume of the hydrogen is twice that of the oxygen. The experiment is then varied. These two elements, in the proportions obtained from water, are made to unite chemically, producing water. Students interested in these experiments on water will remember its composition far more easily than they might have forgotten it. The text-book is a companion, a guide; but the student has acquired his knowledge of chemistry (the composition of substances and changes in their composition) by close observation, and not by learning by heart what the author has written. The former method is attractive, cultivates observation, and develops a practical mind. The latter is distasteful and unprofitable. Trained to study in this way, the students upon entering the second year take hold of the subject of agricultural chemistry (the chemistry of the soil, the atmosphere, and of animal and vegetable life and growth) eagerly and practically. Accustomed to observe, to think, and to compare, they will search the subject for explanation of observations already made upon the farm, and will carry back to the farm that knowledge of the science of agriculture which will make them close observers, careful thinkers, and successful farmers.

Students privileged to take the third year are required to spend, out of fifteen hours weekly devoted to the study of chemistry, thirteen hours in the analytical room. Practical chemistry begins by a course in qualitative analysis. This is followed by gravimetric and volumetric analyses; and the chemical course is concluded by devoting as much time as there is to spare to carbon combustions, nitrogen determinations, and fodder analyses.

The chemical balance, a most delicate instrument, expresses in figures the accuracy or the inaccuracy of the results of the analyses made by the students. Even the most careless workers soon learn to appreciate and observe close and faithful attention to work, thorough cleanliness, and absolute accuracy. The acquisition of these qualities alone is ample reward for the time devoted to the investigation and the study of the science of agriculture.

A. E. SHUTTLEWORTH.

Canada's Welcome to the Earl and Countess of Aberdeen.

[W. J. W. DENSLOW.]

Something special you have noted
In our hand grasp, Aberdeen?
Something more than custom coated
Formal welcome might have been?
True, we are a folk of vigor
In this bracing, ample west:
But our climate's healthful rigor
Was not all that grasp expressed.

True, you bear a name of glory—
You are of the Gordon blood—
And we know the gallant story
Of your clansmen, brave and good:
Still, in thus their scion meeting,
With a touch of extra grace,
We are not your lineage greeting
'Tis not homage to your race.

True, you are a peer of Britain,
Earl and Lord of high degree,
And, perchance, we're not unsmitten
With heraldic witchery:
Still, 'tis not your rank we honor
In that grasp, transcending words
We'd a duke as your forerunner,
And we've often welcomed lords.

Shall I tell you frankly, plainly,
What it means, this subtle thrill
In our voices, which you vainly
Seek to understand? I will.
'Tis that in your life and spirit
We have marked the Christlike plan:
'Tis that you yourself have merit
We are welcoming the Man!

True, we greet an earl high seated,
And a countess noddy born,
Who, in heart and mind well mated,
Do their high estate adorn:
Yet, more high, as man and woman,
Nobler still by noble life,
We give greeting, full and human,
To John Gordon and his wife!

Mechanical calculations teach us that, in order to promote durability, gates should be constructed with the bracing in the shape of the letter N. Simpson tells us, however, of a garden gate of his recollection in which the M (Em) brace gave entire satisfaction.

O.A.C. FOOTBALL TEAM.

C. Carson (Back) F. McCallum (Goal) F. C. Harrison (President) W. J. Brown (Left Half) F. A. Grasett (Back)

G. Hewson (Right Half) P. R. Kennedy, Capt. (Centre Forward) C. A. Hamilton (Centre Half) A. R. Curzon (Spare Man)

G. A. Putnam (Left Forward) W. R. Lewis (Right Forward) W. McCallum (Left Forward) S. R. Curzon (Right Forward)

Football Team.

The O.A.C. need not be ashamed of its football team this season. There was some difficulty in arranging matches, owing to our not having joined the Western Association. However, three matches were played by the I. eleven, two by the II., and three by the III.

The II. eleven, perhaps, is the strongest ever known in the O.A.C., and gave the I. some very good practices. Our first match was with Georgetown, the college obtaining an easy victory of 5-0. Our next was with the Galt seniors on the college campus. On this occasion the team was very much handicapped by the absence of our sure centre-forward, Gunn. Galt scored two goals—one from a corner kick, which rolled in off one of the men. The O.A.C. need not be ashamed of their defeat of 2-0; they put up as fast a game, and all they need is practice. The last match of the season was played with the Eurekas, of Galt, on Thanksgiving Day, on the campus, the home team winning by 3-0. The I. team will be somewhat weakened next spring, owing to some of the players taking their third-year examinations, but out of the II. eleven some good men can be obtained.

It is our intention to enter the Intermediate League for the Western District next season.

Books and Their Uses.

Charles Lamb's friend who left off reading, to the great increase of his originality, assuredly erred on the right side. The danger in this much-written-for age is of reading too much. Placed among the countless shelves of modern libraries, we are like men with many acquaintances, but few friends. We may be on comparatively intimate terms with the novelists; we may occasionally ask a new poet into the house; we are perhaps on bowing terms with the scientific writers; we may just know the historians to speak to; but where are the old, old books which the generations before us loved because they were true and tried? Why do we not know our Shakespeare as good Sir Thomas Lee in "Woodstock" knew his? Has the reader ever read "Paradise Lost" through? Will he ever achieve it unless he be one day cast on a desert island and save a Milton from the wreck, as well as the salt beef and biscuit? "Young men nowadays," says a modern writer, "read neither their Bible nor their Shakspeare enough."

Thus there are books and books. We read too much, and too little. The former of the two excesses is, I think, the more new and remarkable. In days such as our own, when the circulating libraries, with their million mouths, are speaking to the public, it would be strange to say there is little thirst for information of some sort. But there still remains a question whether the craving for books may not be a disease, and whether we may not live too little in ourselves and too much in others. The professor, whose young friend boasted that he read ten hours a day, inquired with amazement, "Indeed; then when do you think?" The master who sees a pupil with idle hands, and fears that, being without a book, he is losing his time, might not unreasonably hope that his other pupil, who is never without a book, is not losing his thoughts. "It is hard," Orlando says, "to see happiness through another man's eyes." It is also unprofitable to see things reflected in another man's mind. There are other books, besides those printed on paper, which are not without their value. Perhaps, even, it was intended that we should sometimes strive to see nature at first hand.

Various as are the kinds of books, so various are the uses to which we put them. There are those who read to kill time, as a refuge from themselves. There are those who read because some work is in the fashion, and it were bad taste not to be able to talk of it. There are those who read in order to give the public the benefit of their judgment; those mysterious men—the critics. There are those who read indiscriminately, with morbid wideness of taste; and, lastly, there are those who read with discernment, whose books are their honored friends—"The souls who have made their souls wiser." Of those who do think, there are few who think for themselves, and a great many who think for the benefit of others. These last are sometimes called, for convenience, critics. All works must first pass through their furnace before they are fit for the general reader. In a spare ten minutes he has the opportunity of reading what another has written in ten days concerning a work which has occupied a third party as much as ten years. How admirably is labor shortened now-a-days, and how considerate it is of the critics always to extract the faults of a book, and leave the general reader to find the beauties! Almost all criticism is too minute and too partial. Hence it fails to exhibit any but a most imperfect view of its subject. It takes a full-blown rose, and, after examination, presents to the reader a heap of petals, without form or perfume. But the number of those who take the trouble of judging for themselves is very small indeed, and there yet remains the disagreeable necessity of forming a taste of one's own; but schemes may possibly be devised for relieving the reader of this trouble as well.

Yet there are some left who feel that it is only by being true to their own nature, imperfect as it is, that they will rise above it. They feel that from some books they can rise better men, and that from others, which are circulated by the thousand, they can take no profit. They feel that there are some books whose essence is eternal, because it belongs to a nature common to all. The world does not outgrow Shakespeare. But they have found that there are other books whose work is only for some times, or some minds. They have a book to speak to them that is dumb to others. It may be dumb to them now, and speak to them at a future time. They will not speak lightly of such, but look back with love and reverence to the steps by which they rose "to something greater than before."

One generation cannot decide upon the real worth of a book; only the lapse of time can prove whether it is imperishable or not. But every man who in his writings addresses himself successfully not to time, party, or fashion, but to that which underlies all these, may look forward to immortality as his reward. He may not count on the preservation of his name, but he may look, as a higher consolation, to this: that no true thought, no beautiful conception, he may give to the world may be lost; that if it be received from him by few, it will be reproduced by them in other forms of good, and so live on forever.

"Thank God for books!" said Sidney Smith: and who that has known what it is to depend on them for companionship but will say from his heart, "Amen"? In lone country houses, where friends are few; in crowded city streets, amid greetings where no kindness is, thank God for books! Dearest, best of friends, soothing, comforting, teaching, carrying us far away from the "briars of this world," never importunate, never impatient, may we learn to use you as you use us!

F. C. Harrison.

Electric Motive Power.

This article is not written for a scientific journal, nor does it pretend to pose as a scientific article: but electric motive power is coming into such general use that every mind, even the least inquisitive, is startled into curiosity and wonder at the sight of huge loads being drawn along by some unseen, mysterious power. To answer some of the questions that would naturally arise in an enquiring mind, as far as it is possible to answer them without the aid of diagrams or models, is the purpose of this paper.

The machine which is used for electric motive power is called a *dynamo*. There are very many kinds of dynamo, but the description of a typical example will serve the purpose.

A dynamo consists of two essential parts, a *field magnet*

and an *armature*. Imagine a piece of soft iron, shaped like a horseshoe. This iron possesses no peculiar property, but is yet only a simple piece of soft iron, differing not in the least from any other piece of soft iron. But suppose that, beginning at one end, a copper wire be wound around it, like thread on a spool. The wire runs spirally round the iron until the whole piece is surrounded and the wire hangs free from each end. Now, if these free ends are connected with an electrical machine, so that a current of electricity runs about the iron along the spiral wire, this simple piece of soft iron becomes a magnet, about the body of which electric currents are circling, parallel to the currents in the surrounding wire. This is the *field magnet*, and the ends of the iron are called the *poles*.

Imagine, again, a cylindrical or bobbin-shaped frame, hollow, and mounted on an axle, with perhaps rows of spikes running lengthwise on the surface. Between these rows of spikes wire is wound: not like thread on a spool this time, but from end to end. It is easily seen that the shape assumed by the wire in one revolution is that of a rectangle. Very many turns of wire are wound upon this frame, there being usually a number of separate pieces of wire, the ends of which are attached to small copper bars fixed upon the axle of the cylinder. Two narrow metal plates, or *brushes*, are attached to the machine at the end of the axle. When the machine is working, these brushes are adjusted so as to be in contact with the copper bars above mentioned. This cylindrical arrangement is called the *armature*.

Now, suppose that the armature is placed between the poles of the field magnet so that its axle is at right angles to the plane of the magnet. A current of electricity is sent through the wire of the field magnet. Wires are attached to the two brushes of the armature, and a current of electricity circulates through its wires. What is the result? Magical! The armature begins to turn upon its axle, driven by the mutual attractions and repulsions of the currents in the field magnet and armature respectively.

But that is not all. If, instead of sending a current of electricity through the coils of the armature, a belt from a steam engine is placed upon the axle, and the armature made to revolve by mechanical power supplied by the engine, what, then, is the result? The currents of electricity in the field magnet, in some mysterious manner, generate currents in the revolving armature.

Observe, then, these two cases. If electrical energy in the form of currents is sent through the coils of both the field magnet and the armature, the armature is made to revolve, and the dynamo can be made to do work, such as the running of a street car. In this capacity the dynamo is called a *motor*.

In the second case, electrical energy is supplied to the field magnet, and mechanical energy is supplied to the armature, making it revolve. The result is, as stated above, currents of electricity are generated in the coils of the armature, and these currents are led away through the brushes and leading wires, and we have electrical energy produced by the machine. In this capacity the dynamo is called the *generator*.

The typical shape of the field magnet is that of a horseshoe, but that shape is by no means essential. One dynamo in the Guelph Electric Works has a field magnet of the following description: A large, massive, circular rim has on its inner surface ten projections, on each of which heavy copper wire is wound, giving the appearance of ten huge spools hung inside the rim of a wheel. Within the circle enclosed by these spools the armature rotates. The large generator in the same shop consists of two massive bed pieces of soft iron of the same size and shape, so moulded that, when brought together, a cylindrical space of about a foot in diameter is left between them, in which the armature rotates. The bed pieces fit very closely around the armature, enclosing it entirely, except for a narrow space at the top and bottom. On each bed piece is a huge spool of copper wire, and across the tops of the spools is another massive piece of iron acting as a head piece. This head piece, the spools, and the bed pieces form a field magnet, of which the bed pieces are the poles. This dynamo weighs about 9,500 pounds, and is used to supply power for different establishments in the city. The steam power used in running this generator gives the armature a speed of 1,000 revolutions per minute, and the current strength is equivalent to 60 horse power.

In the electric street railway system both the generator and motor are used. In the power house steam power is used to rotate the armature of the generator between the poles of the field magnet. A current is generated in the armature, and is led away to the overhead wires in the streets. The pole from the car conducts the current down to a dynamo beneath the floor of the car. Here the current circulates through the coils of both the field magnet and the armature, making two sets of currents. The mutual attractions and repulsions of these two sets of currents cause the armature to rotate. Intangible and mysterious as is this magnetic force, you can have no doubt either of its reality or its intensity as you sit in the car and feel the sudden propulsions given to an immense load when the motorman loosens the brake and removes the resistance to the current.

But what completes the circuit necessary to the flow of the current? Where does the current go after leaving the car? It passes through the car wheels to the rails, and thence to the earth, where it finds its way back unerringly to the armature brush of the generator. It appears to be the general impression that the current finds its way back along the rails, but such is not the case. Only an indefinitely small amount of the current flows along the rails. The rails are connected to one another by wires, and, at short intervals, rods run down from these rails into the earth. If contact between the rails and the earth is not sufficient to ensure the escape of the current to the earth, these rods produce the desired effect.

It is interesting to trace out the different transformations of energy which take place in the running of a street car. First, the coal used to feed the engine is nothing but the energy of the sun's rays which has been imprisoned for countless ages in the bowels of the earth. This imprisoned energy bursts forth and is transformed into the energy of expansion of the steam which serves to work the steam engine, and hence is transformed into mechanical energy. The mechanical energy of the steam engine drives the armature of the electric generator, and is transformed by the generator into electrical energy. This electrical energy, in the form of

the electric current, glides along the wire to the street car, and is there re-transformed into mechanical energy by the motor, and drives the street car. A very remarkable fact concerning all these transformations is that if the machines are properly constructed, the transformations take place with but little loss of energy, and the work done by the steam engine at the one end of the series is very fairly represented by the work done by the street car at the other.

To the unthinking, unimaginative mind the electric dynamo is a machine, and nothing more. But in view of the facts that next to nothing is known about electricity in its essence, and that the inner workings of the electric current is, and perhaps ever will be, shrouded in mystery, the achievement of such wonderful results in the practical application of electrical energy is, to the thoughtful, observant mind, one of the greatest intellectual triumphs of this wonderful nineteenth century. J. B. Reynolds.

Philosophy of Religion.

Religion is, as I understand it, man's fidelity in conforming to any practice, his manifestation of piety, or natural inclination to worship. From the study of the national religions, we learn that man is constitutionally a religious being: that he has a religious nature, instincts, and emotions. Religion is universal, and had an existence among men before science, literature, art, philosophy, law, government, or civilization. All crude systems of religion are natural in the sense that they have grown out of man's nature, and were all a natural tendency of the human soul to worship. The institutions of religion have grown out of man's religious nature, as society has grown out of his social instinct, the family out of his domestic affections, ethics out of his moral intuitions, and science out of the application of reason to the phenomena of nature. Like every other form of human development it is natural, and reveals in the finite a want for, and faith in, the existence of the infinite.

On its subjective side, true religion is natural: on its objective side, it is supernatural. As a movement of man, it is natural; as a revelation of God, it is supernatural. Faith is natural: but God, as the object of faith, is supernatural. Christian morality is natural: but the Sermon on the Mount was a supernatural revelation. Love for Christ is natural: but His work, character, and life were supernatural. Religion is a nature-developing power; but it has taken place very largely under supernatural conditions. There is in it a human and a divine element. It is human faith in divine truth, human love for a divine personage, human obedience to a divine law, a human experience of a divine love, human trust in a divine Father, and human submission to divine authority.

Some hold that all worship springs from man's feelings of dependence, sense of weakness, and conscious helplessness. This may be true, but it is not the whole truth. Religious phenomena as certainly reveal faith in God's goodness, wisdom, and power as it shows in a man a sense of sin, ignorance, and weakness. Practical religion, in its faith, worship, benevolence, and zeal, reveals man's strength as well as his weakness. It reveals largeness of spirit, grasp of thought, strength of will, and energy of character. The zeal, consecration, devotion, benevolence, and courage which we witness in the leading religious characters of history manifest great power. No form of human activity has shown more energy of thought, feeling, and action than has been shown in the religions of the race.

Others hold that the seat of religion is in the emotions, and not in the intellect; that religion is a feeling, and not a thought; that it does not belong to the head, but to the heart. This is the statement of a half-truth, and the affirmation of a positive error. It is true that religion is an emotion; but it is not true that it is not also a thought. There is no emotion without intelligence, and no rational feeling without thought in human experience. In man's nature there is no heart without a head, and no enthusiasm without reason. In the action of the human mind the intelligence precedes emotion, thought arises before feeling, and the head thinks before the heart loves. Knowledge is the necessary condition of affection, intelligence of emotion, thought of feeling, and feeling of action. We never have intelligence without emotion: and we never have, in the rational mind, emotion without intelligence. Therefore, this theory is founded upon an incorrect psychology, and is for that reason untrue, and cannot be applied to practical life.

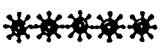
But even if religion were only an emotion, that would not prove it untrue, or without an important function. The existence and function of the emotions are facts of human consciousness and experience, and history shows that feeling is just as necessary and important as thought. Emotion is, in fact, the great working force of practical life: and without it the great enterprises and industries of the world would not only stand still, but would cease to exist.

The theory that religion is a temporary stage of human progress, and not a permanent form of human development, is contradicted by consciousness, experience, and history. Comte's great social law that the individual and society pass through three stages in their progress from savagery to civilization—that is, the theological, metaphysical, and scientific—is in no sense true. Is there such a law of social progress? It is certainly true that theology, philosophy, and science are three forms of human development, which are mutually inclusive, and not exclusive, of each other. As forms of human development, they co-exist in the same individual and in the same society. They do not injure, but assist, each other; and science attains its largest growth only when accompanied by philosophy and religion. The present is the most scientific age the world ever saw, and it is, at the same time, the most philosophical and religious. The German, French, and English-speaking peoples are more scientific than any other people on our globe, and, at the same time, they are truly philosophical and religious. Religion is, therefore, a permanent element in human character, and a persistent factor in human progress. Man will never outgrow his capacity for it, his need of it, and its influence upon his life and character. Its influence upon man is permanent, and will become universal. It is demanded by man and nature; it meets a universal want. It is the result of the exercise of man's spiritual faculty, and grows out of his relation to God as his Creator and Saviour. His religious nature recognizes this revelation, and the duties which grow out of it. Man's universal effort to discharge these duties is, comprehensively, the essence of his religion.

"Beautiful shoulders are those that bear
Ceaseless burdens of homely care
With patient grace and daily prayer." W. J. B.

DAIRY DEPARTMENT
ONTARIO AGRICULTURAL COLLEGE

CHRISTMAS, 1890. CHRISTMAS, 1893.



Outside View of Dairy Department.

- - 1890 - -

Small farm and stabling for sixteen cows and a few calves.

Old horse-shed extending towards dairy, supported by a straw stack.

Two old sheds, filled with miscellaneous matter, extending to west of stable.

Old driving-shed, containing a sample of nearly everything used on a farm or in a dairy, with room for a buggy or wagon.

Stone root cellar, converted into a hog pen, which was so damp that a number of hogs died of rheumatism, and whence during hot weather came smells which added "flavor" to the butter made in the creamery near by.

Drain from dairy filled with old buttermilk, and the contents oozing from a hole in the ground below dairy.

A few apple and cherry trees, between which were grown, during summer, potatoes and weeds.

- - 1893 - -

Barn, 118 feet long, 35 feet wide, stabling for 30 cows, and a number of young stock.

Circular silo, 24 feet diameter, 29 feet deep, tread power and separator room for creaming milk attached to dairy stable.

Box stalls, horse stable, calf pen, covered manure shed; all connected with cattle barn.

Neatly painted driving-shed, with ample room for conveyances, ensilage cutter, and other dairy implements.

Level yard, piggery located to the southwest some hundred yards, with floors, neat pens, covered manure shed, and paved yard. Pleasant appearance on outside.

New drains, with cistern for receiving drainage and pump to elevate it into a tank, the contents of which are spread on the land.

Inside View of Dairy Department.

- - 1890 - -

The west end of the dairy consisted of two bedrooms, one parlor, one dining room, and one back kitchen. These contained: In one bedroom, two boxes for deep cans (the floor of the room was a skating rink, or could be used for such); the other was full of logs, corn, rats and mice; the parlor was full of nothing; dining room had a furnace boiler which leaked so badly that it took "Jim" a good share of his time to dip the water out of the ash box to prevent it putting out the fire. The back kitchen had something of nearly everything, but the most prominent smelling article was some rancid butter which Rennie (the nurse) had been trying to bring back to a normal state of health.

6-horse boiler and 8-horse engine, the latter greased with butter once a week.

No storerooms for fuel or for articles which are required only occasionally in dairy work.

Creamery managed for benefit of a few persons. Refrigerator for creamery butter.

Small room for office. Coil of rusty pipe under cream platform, said to be used for keeping place cool.

Ice house.

- - 1893 - -

Lecture room seated with chairs, which look down on the work room of the butter department of the Home Dairy School. Basement underneath with various methods of gravity creaming. Refrigerator. Washroom for cans. Separators, churns, workers, printers, milk testers—a complete outfit for giving instruction in home dairying, with a first-class instructor in charge.

Ice house adjoining butter department of Home Dairy building.

25-horse boiler and 25-horse Wheelock engine, supplying heat and power for the two dairy buildings.

Fuel room and storeroom.

Eight cheese vats, with complete utensils for giving instructions to students and for experimental purposes; one end seated with chairs for for taking notes during discussions of practical dairy subjects.

Press and curing rooms for cheese made by dairy students.

Two neat brick cottages for the dairyman and cattleman, with suitable yards attached. A new dairy building, 42 x 84, finished in first-class style, with bath rooms, sitting rooms, coat rooms (for both ladies and gentlemen), lecture room, office, library, live stock classroom, milk testing and butter rooms equipped in the very best manner (latter not quite finished at this writing).

What has brought about the change? *Labor effectually directed and capital wisely expended*, which are the results of somebody's thought. These two will do much to transform the farms, the homes, the townships and counties of this province. For the improvement which is needed in many departments of farm work it is not necessary so much that there shall be more labor and more capital, but that the present supplies be utilized to their fullest extent.

That the student may make the most of his time while at college, he does not need more capital nor more time to work; but he does need to make use of present supplies to their utmost capacity. This does not imply poring over miserable or unmiserable books all the time; but it does imply *concentration of thought* on the subject in hand. One hour of good hard thinking and fixing of energy on the work before us will do more than one day of aimless, listless toying with books.

Thinking labor and thinking capital are needed by professors of a college, by students, by farmers, by all classes; and then shall come the days when worn-out soils shall be as the virgin prairie; tumbledown buildings and fences as though they had been recently built; unattended, weedy gardens as those of the prime horticulturist; the dairy cows as the kine of the land which flows with milk and honey; the dairies as those of queens' dairies: the butter as the gold which kings strive for; the cheese as that which the best Canadian makers know how to produce; students shall be models of gentlemanly behavior, and the fine list shall be a thing of the past: farmers shall all be associates of an agricultural college: their wives and daughters shall be as wise as their husbands and brothers; and Ontario shall be known as the Garden of America, the home of the bravest, truest, wisest race that ever received nourishment from Mother Earth.

H. H. DEAN.

The O.A.C. Review

Published Monthly During the College Year

BY THE

LITERARY SOCIETY OF THE ONTARIO AGRICULTURAL COLLEGE, GUELPH.

EDITORS:

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SUBSCRIPTION RATES:

Annual subscription, 75 cents: $1 if not paid before 1st February.
Single copies, 10 cents.

Advertising rates on application.

Ex-students are invited to contribute to our columns.

The O.A.C. Y.M.C.A.

This association first took definite shape in March, 1889. It has since steadily held its way as a Christian educator among the students of the O.A.C.

Two meetings are held each week Thanks to the President of the O.A.C., we have a very nice room to meet in, and one very well furnished.

Five personal workers' classes aid in the general endeavor to push the work in our midst.

Many sheaves, under the power of God, have been gathered in in past years, and we trust that the work will go on increasing in usefulness.

Literary Society.

This society is doing a good work in the college in preparing the students for public speaking and deep thinking. It dates its existence from the year 1880, and has since been yearly growing in strength and popularity, until now the membership comprises nearly every student in the college. The programme varies from time to time, but there is always an interesting and instructive debate bearing on some branch of our calling, which is generally pretty thoroughly discussed by the members present. Extempore, and occasionally descriptive, speeches are always on hand, pleasingly interspersed with good music, recitations, etc. A distinctive feature of this season's meetings is the introduction of what are termed hat, or minute, speeches, which are shown to have a good effect in inducing the members to take part.

The meetings are held every Friday evening throughout the college year (spring term excepted), the authorities having generously set aside that evening as exempt from study.

PERSONAL.

As this month's number of THE REVIEW will have a considerably wider circulation than our regular issue, we thought it would be of interest to the outside world to know what our graduates are doing. We have succeeded in hearing from nearly all of them; but as our space this month is unavoidably limited, we shall only be able to mention the occupation of each, and hope at some future period to have an opportunity of giving a fuller account of the grand work which is being accomplished by them in the agricultural world.

G. A. Brodie, '90, is a successful farmer in York county.

D. Buchanan, '91, is Assistant Editor of *The Canadian Live Stock and Farm Journal*, Toronto.

L. G. Bell, '93, is farming at Qu'Appelle, Northwest Territory.

G. C. Creelman, '88, is Professor of Biology at the College of Agriculture and Mechanics in the State of Mississippi.

J. A. Craig, '88, is Professor of Animal Husbandry in Wisconsin University.

J. H. Cowan, '91, is in the milling machinery manufacturing business, in company with his father, in Galt, Ontario.

W. L. Carlyle, '92, is lecturing on Dairy Science in Minnesota.

J. E. Crealy, 93, is farming in Middlesex county.

H. H. Dean, '90, is Professor of Dairying at the Agricultural College, Guelph, Ontario.

G. E. Day, '93, is Lecturer on Agriculture at the Agricultural College, Guelph, Ontario.

Wm. Dyer, '93, is farming in Ontario county.

L. W. Eaton, '93, is in charge of Mr. E. D. Tillson's dairy at Tilsonburg, Ontario.

H. Field, '91, is attending Victoria University, Toronto.

D. Z. Gibson, '92, is following the agricultural profession in Haldimand county.

G. Harcourt, '89, is Professor of Agriculture at Prince of Wales College at Charlottetown, Prince Edward Island.

F. C. Harrison, '92, is assistant to Professor Panton in the Department of Natural History at the Agricultural College, Guelph, Ontario.

H. L. Hutt, '91, is Professor of Horticulture at the Agricultural College, Guelph, Ontario.

R. Harcourt, '93, is Assistant Chemist at the Agricultural College, Guelph, Ontario.

J. W. Hutchinson, '92, is farming in Wisconsin.

A. Lehman, '89, is Professor of Chemistry at New Orleans Experiment Station.

F. B. Linfield, '91, is Professor of Animal and Dairy Husbandry at Utah Agricultural College.

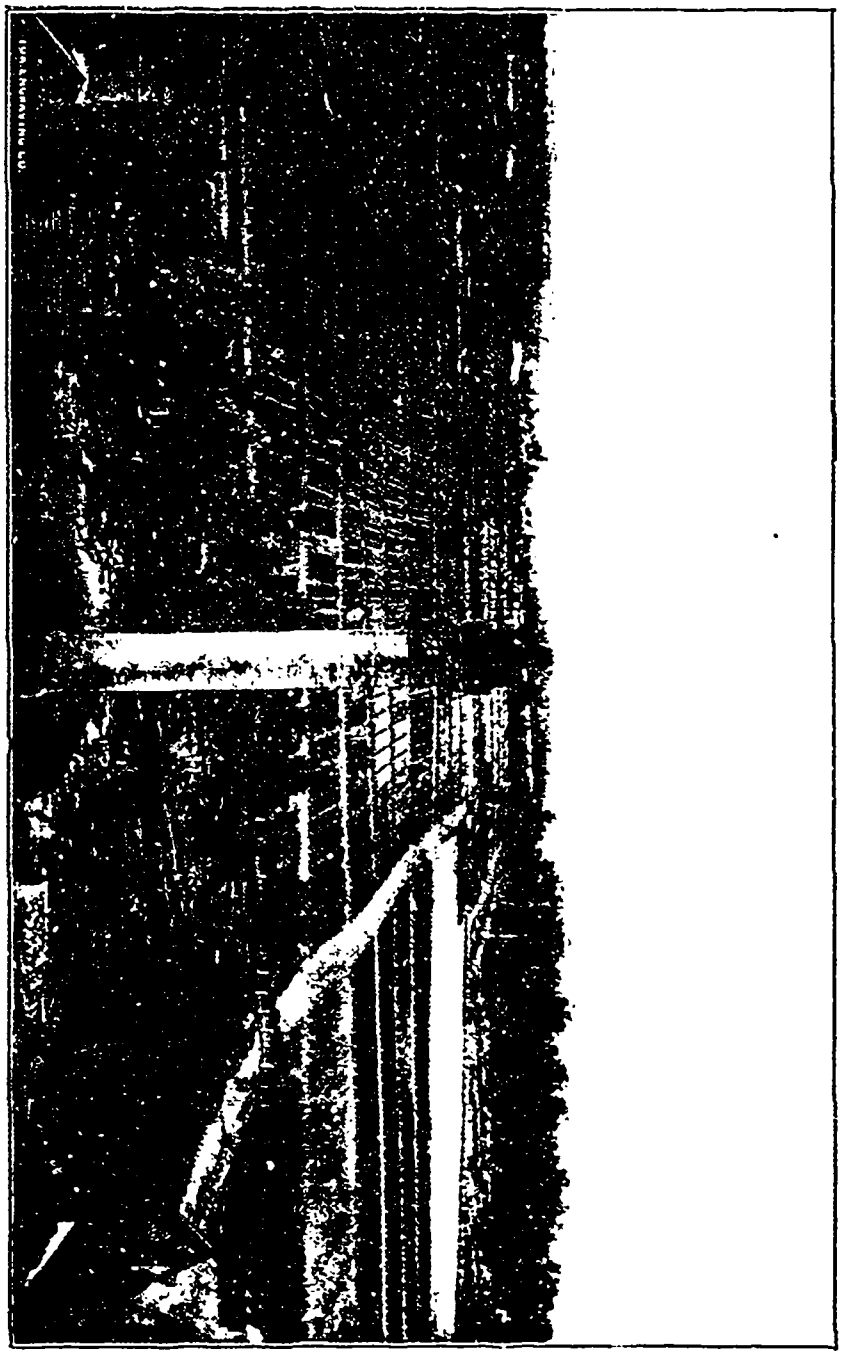
G. F. Marsh, '92, is Assistant Editor of *The Farmers' Advocate*, London, Ontario.

W. McCallum, '90, is managing a large fruit shipping business in Jamaica.

S. N. Monteith, '90, is engaged in farming in Perth county.

J. H. A. Morgan, '89, is Professor of Horticulture and Entymology at Louisiana Agricultural College.

R. N. Morgan, '92, is attending the Veterinary College in Toronto.



INTERIOR OF BOOK STORE, ONTARIO AGRICULTURAL COLLEGE.

W. F. Newcomen, '92, is pursuing post-graduate studies in dairying and chemistry in Denmark.

W. J. Palmer, '91, is in charge of an extensive dairy business on Yonge street, Toronto.

B. E. Patterson, '88, is Editor of the Amherst *Daily Press*.

T. Raynor, '89, is farming in Prince Edward county.

A. Shantz, '90, is engaged in farming in the county of Waterloo.

J. A. B. Sleightholm, '91, is a prosperous farmer in the county of Peel.

H. E. Storey, '93, is at home on his father's farm in Prince Edward county.

R. S. Shaw, '93, is managing his father's farm in Wentworth county.

A. M. Soule, '93, is engaged in the fruit-growing industry in Welland county.

C. F. Whitely, '91, is employed at the Central Experimental Farm, Ottawa, as assistant to Professor Robertson, Dominion Dairy Commissioner.

C. A. Zavitz, '88, is Manager of the Experimental Department at the Agricultural College, Guelph.

The Experimental Department of the Ontario Agricultural College.

There are but few lines of work which have developed more rapidly during the past ten years than that of experimenting in agriculture. It scarcely seems possible that less than fifty years have passed by since the establishment of the first agricultural experiment station. This is the case, nevertheless, and we are greatly indebted to the little company of farmers who joined themselves together in the little German village of Moechern, and there organized the first system of experimental work in agriculture. The influence of these few German farmers was not long confined to the village of Moechern and its vicinity, but the seed thus sown very rapidly brought forth manyfold. We are told that, within five years from the time this first station was established, four others were started within the borders of the German Empire, and that to-day there are upwards of one hundred experiment stations and kindred institutions in the different countries of Europe.

It was not until 1875 that this movement took any hold in America, at which time the first experiment station was established at Middletown, Conn. Five years later, three others were in operation in the United States. In 1887, there were fifteen, and to-day every state and territory in the American Union, with the single exception of Alaska, can boast of its experiment station. These institutions at present employ 491 trained men in the work of administration and inquiry. The stations are supported almost entirely by the general government of the United States, and they received during 1892 the sum of $1,017,144.

The Ontario Agricultural College was established in 1874, being just one year previous to the commencement of the first experiment station in the United States. Two years from this date active work was started in the Experimental Department, which has had a steady and a substantial development from that period until the present time. In 1876 there were 40 field plots: in 1885, 170; in 1889, 464; in 1891, 1,046; and during the present year upwards of 1,600 field plots were devoted to experimental purposes. The live stock tests, which have been included in the work of the Experimental Department up to the present time, have also much increased in both number and complexity. In the past three years, twenty-two experiments have been conducted with cattle, sheep, and swine, and for this work upwards of 1,000 animals were used in the different tests.

Seven years ago, the Dominion Government passed an act for the purpose of establishing five experimental farms throughout Canada. The principal farm was to be located at Ottawa, and was to serve for Ontario and Quebec: the other four were to be located as follows: One in the Maritime Provinces, one in Manitoba, one in the Northwest Territories, and one in British Columbia. These farms have all been purchased, and active work is being pushed forward on each. We believe excellent service is being done by those in charge of these institutions, and sincerely hope that the valuable work which is being accomplished will receive the proper amount of appreciation from those for whom it is intended to help.

In the Experimental Department at the Ontario Agricultural College several lines of work have been followed, and many experiments of a thoroughly practical nature are being carefully conducted year by year. Upwards of four hundred varieties of grains and other seeds have been imported within the past six years from at least sixteen different foreign countries of the world. These have been tested in the trial grounds. A very full set of Ontario's varieties have also been procured and grown side by side with the foreign kinds. The results of these are given in detail in each annual report of the Agricultural College. In this line of work we consider the department has certainly met with marked success. Among nearly all classes of farm crops varieties have been obtained which produce considerably larger yields than the best of the Ontario kinds. For instance, in the experiments of five years, eight varieties of barley have yielded more than the Ontario six rowed; the Mandscheuri (six-rowed) giving an average of eight bushels per acre more than this variety. The variety of oats known as the Egyptian, which has been extensively grown over Ontario for several years, has been surpassed by no less than sixteen varieties, while exactly fifty kinds have given a larger average yield of grain per acre than the well-known "Welcome" oats of Ontario. Of these fifty varieties above mentioned, thirty-nine were imported in the spring of 1889, and eleven were obtained in various parts of this province. The Joanette, a variety of black oats from France, gave an average of fourteen bushels, and the Siberian, a variety of white oats from Russia, gave an average of nearly nine bushels of grain per acre more than was produced by the Egyptian.

Besides variety tests, much attention is given, at the present time, to the careful selection of seed, in order that the leading varieties of farm crops may be raised to a still higher form of excellence. From experience in growing the same varieties of grain crops upon the same farm for a number of years, there seems to be but little danger of deterioration, providing a proper care is exercised in the selection of the seed sown. Other experiments are being conducted in methods of

cultivation; application of fertilizers; seeding at different dates; growing grain for fodder in various combinations; growing farm crops in various kinds of soil; preparing potatoes in different ways for planting; and also along other lines of work by which the farmers of Ontario may be profited.

A collection of the varieties of grain grown upon the experimental plots is prepared annually, and presented at the leading agricultural exhibitions in Ontario. By this means thousands of farmers have an opportunity of comparing the various varieties for themselves, and also of having the special habits of growth of the different kinds clearly pointed out by those in charge of the exhibit. The information gleaned at these exhibits has a tendency of creating a deeper interest in the careful study of the reports of experimental results as they are published from time to time. In the spring of 1893, a collection of the products of the experimental plots was placed at the World's Columbian Exposition, held in Chicago. It remained in position throughout the whole six months of the exposition, and was highly spoken of by foreigners as well as by Canadians.

During the past three years upwards of fifteen thousand packages of fertilizers and choice varieties of seeds have been distributed among the farmers of Ontario through the Agricultural Experimental Union. A regular system of co-operative work is thus established throughout the province. Twelve distinct experiments are conducted annually with fertilizers and different varieties of grain, root, and fodder crops. Great good is resulting from this feature of the experimental work, and many of Ontario's best farmers have joined in these co-operative experiments in agriculture. C. A. ZAVITZ.

CO-OPERATION.

The watchword of the world to-day seems to be "Co-operation." There was a time, when our country was younger, that every man seemed able to stand alone: his business was not disturbed; the world moved slowly; the stage coach was the mode of travelling; freight was carried in sailing vessels; the farmer was content to drive his ox-team and "get there" in time. The farmer cut his own grain with the cradle, gathered the fragments with the handrake, his sons and his daughters helped to secure the crops. The good wife baked her own good bread, made the clothing for the household, the hum of the spinning wheel was no uncommon sound: the family did their own knitting, made their own candles, and were independent; in fact, could almost live within themselves. That was co-operation in the family. As time went on things began to change; population began to increase faster than room was made for them; the inventive genius of man began to assert itself; steam power came to the front: and things began to wake up generally. The stage coach gave way to railway: steam vessels carried merchandise from distant lands: the farmer found the old ox-team too slow for the times. Factories sprang up as if by magic; the spinning wheel was discarded, the bowels of the earth was searched and a new reign of light inaugurated, and as gradually the old tallow candle burned out. Capital began to concentrate itself, and the result was that those many articles of home consumption were brought within the reach of the consumer. The farmers began to reap the fruits of co-operation from without. Combined capital reduced the price of the necessaries of life, and up to a certain point the farmer was benefited by such combination of capital. Competition was keen, and so far "opposition was the life of trade." In time manufacturers found too much competition became the "death of trade". business men saw the necessity of combination for mutual protection. Railways once competing with each other for the trade of the country became amalgamated; legislation was secured to enable them to complete their combination. Manufacturers united their capital for the same purpose. Medical men rushed to the legislatures for protection, and secured enormous fees, which were established and made legal, and all for the sole purpose of extracting money from the unprotected public.

The farmer in a very special manner stood alone, and each strove to fight his way single-handed against organized capital and experience. About twenty years ago farmers became aroused to the necessity of co-operation as their only defence, and formed the "Grange," which was the means of opening the eyes of the farmers as never before; they became greater readers, and much good was accomplished. As no organization can exist without combined confidence, so after a few years the Grange began to dwindle, and gradually disappeared for a time; but, like the sleeping giant, it has returned to us under another name, and the Patrons of Industry are now making our legislators tremble in their seats. Farmers are experiencing in a way they never did before that "in union there is strength." Through the medium of the Patrons farmers have reached out and joined hands with the producer, and much good is being accomplished. When we see the huge giant monopolies that are being formed in the line of farming implements, coal oil, barbed wire, binding twine, and a hundred others of those things most necessary to the tiller of the soil, we are convinced that organization must be fought with its own weapons; and we trust that good judgment and deliberation will prevail in this society, and, if such power is wisely directed, the dawn of a new era may be said to have appeared, and the downfall of class legislation near at hand. Let "equal rights to all and favors to none" be the war cry; let the aim of every member be to add dignity to labor, and in all dealings with their fellow men be honest, just, and fearful of nothing, help the fatherless and the widow, and keep themselves unspotted from the world.

Will it Pay to Breed Horses?

Owing to the present state of the horse market, it is not rare to hear the farmer ask, Will it pay me to breed horses? That depends upon the class of horse you purpose breeding. If the common work-horse, with no particular breeding, the answer is No: decidedly no. And why? Simply because there is no demand for that horse now. Since the introduction of electricity as motive powers for street railways, etc., the demand for the street-car horse, which the farmer could a few years ago breed with a certain amount of profit, has ceased. Then, again, the heavy draught horse is not in sufficient demand to warrant his breeding to any great extent. The local demand for such horses is limited, and the markets to which we sold in years back, viz., the American and the Northwest markets,

now produce their own draught horses. Mostly every farmer in Ontario is overstocked with horses for which there is no demand. This should not be, but it is, from the fact that in many cases the farmer has, even in the face of the state of the horse market of late years, continued to breed to the cheap mongrel stallion, with which, I am sorry to say, the country is overstocked. By breeding year after year to such stock nothing better than the present state of things could be expected. There are hundreds of horses in the country to-day bred in such lines that, although young and sound, if put up at public auction would not fetch enough money to pay for their feed one year. Now, what is to be done? It may sound rather heroic; but I think that if every farmer were to take all such stock that he doesn't need to work his farm out to the bush and shoot them, it would pay him. By so doing and selling the food it takes to keep them, he would soon make enough to buy a well-bred mare to breed from; and, by the way, I would recommend that the stallions that produced such stock be included in the slaughter. The fact is just this: just so long as he continues to use inferior sires, so long will he be overstocked with unsalable stock.

The question now presents itself, What horse does the market demand, and how are we going to produce him? The market demands the pleasure horse, that is, the carriage horse, dog-cart horse, cobs, saddlers and hunters. For any of the above there is a fair demand, and fair prices can be obtained even in the present state of financial depression; for, of course, the American market is what we principally depend on, and the depression in financial circles there affects our horse market materially. We trust times will soon be better in that respect. The pleasure horse is the rich man's horse, and if we can suit his fancy he will give us a fair, and in many cases a fancy, price. Now, to produce any of those horses, we must select the best dams our means will allow, and cross with the Thoroughbred or Hackney stallion, or in some cases with the trotter. Even our ordinary farm mare (if she have some hot blood, all the better), if crossed with a good Thoroughbred, will produce an all-round horse; that is, a horse that excels in the saddle, makes a fair hunter, and does fairly well in the carriage. I think the mare with little hot blood should be bred to the Thoroughbred in preference to the Hackney. The produce of that cross would, in my opinion, be the mare to breed to the Hackney, as he would be likely to have both size, spirits, and action. There is a great demand for action: the higher a harness horse gets his knees, the more he is worth. No matter to us if he doesn't last so long; the market demands him, and it is for us to produce him; and the sooner he wears out, the sooner there is a demand for another. In selecting sires we must be careful to get good pedgree and good individuality, and, by all means, size. In many cases it appears to be the tendency to breed small when crossing ordinary mares with the Thoroughbred. We must avoid this as much as possible; for although an ordinary sized half-breed is valuable, he is not nearly so valuable as a larger one, provided both be of equal quality. I can't speak from experience of the produce of the Hackney, but I think he should be the means of keeping up the size. Some may say, If you keep on, you will get a perfect mongrel. In answer to that I might say, What are all horses but the Thoroughbred? We want to produce a large, stylish, upstanding animal with good action and good manners, and it is for us to ascertain how we can produce him and continue to produce him. If we produce a strain of horses that will breed on, all the better. Many good horses of the classes named have been produced by the trotting sire, but we must use him with discretion. The tendency in many parts is to breed all mares to the trotter in the hopes of producing a racehorse. For one small breeder who has produced a horse valuable as a racehorse, hundreds have been ruined in trying to do so. It is the province of the rich man to produce racehorses at either the trotting or running gait, and if the ordinary breeder does get one it costs a small fortune to develop him. Where this indiscriminate breeding of trotting sires is carried on, there are produced a lot of mean-looking, small animals, no use for anything but to draw a light trap over a light road. Therefore, in breeding to the trotting sire, we must be careful. Above all, we must shun the individual with the mongrel stallion who travels around the country crossroads, serving for what he can get. He will refuse no offer, "reasonable or otherwise." Man and horse are a curse to the country; the former should be labelled "dangerous," and the latter shot on sight. It is the pleasure horse the market demands, and the pleasure horse we must produce to make the business both interesting and profitable. *This horse will do any ordinary farm work, but he won't* be kept long by the farmer, as the country is full of buyers looking for them.

J. H. R.

The Horticultural Department.

To give the readers of THE REVIEW a brief outline of the work of this department, it may be divided into two branches; *class-room work* and *outside work*. These two sections of the work were formerly under separate management, but under the new order of things are now included under one.

In the class room the course of lectures deals with the propagation, cultivation, management of all the Canadian-grown fruit and vegetables, from the planting of the seed to the marketing or storing of the crop.

Arboriculture and floriculture are dealt with as fully as may be considered practical for those interested more particularly in agricultural and horticultural pursuits.

As far as possible, the lectures are illustrated in the class room and work room by object lessons. In the work room the students themselves practise the methods of propagation described in the class.

In the construction of our new greenhouses a large horticultural laboratory, 12 x 64 ft., has been fully equipped, where students may carry on original work in the propagation, hybridizing, and management of plants.

The outside work of the department may be treated of under three headings.

1. *Supplying the college with fruit and vegetables, and beautifying the surroundings.* This in the past has been the main object of the outside work, and has been very successfully managed. The vegetable garden consists of about four acres, in which are grown a great variety of vegetables in sufficient quantities to supply the demands of the college. Some idea of the amount required to feed our family of boys may be

had from the fact that potatoes alone disappear at the rate of fifteen bushels per week.

During the winter and spring months the supply of vegetables from the garden is supplemented with radishes, lettuce, tomatoes, cauliflower, etc., grown in the forcing house. The fruit supply is in some respects limited, particularly so in the case of the larger fruits, but of the smaller fruits there is generally an abundance.

The management of the lawns, greenhouses, and ornamental clumps has, during the past, been the heaviest work in this department. The lawn covers an area of about twenty-three acres, and with its extensive drives, flower beds, and shrubbery clumps has, it is estimated, between six and seven miles of border, all of which is kept in excellent trim with the edging knife. All of this extensive lawn is mowed regularly, and kept in first-class condition, requiring constant attention all through the spring and summer months. On the lawn and in the arboretum are to be found a great variety of hardy trees and shrubs suitable for protection and ornamentation.

Our new greenhouses in extent and completeness are probably unequalled by any other similar institution on the continent. We have an area of about 7, - square feet under glass, and the houses are fitted up with all the latest modern improvements. They are well stocked with plants, which are labelled in a way that students may readily become familiar with their scientific and common names. A number of our finest plants added much to Ontario's display at the World's Fair this year.

2. *Providing an object lesson for students.* In conducting all the outside work of the department, we hope to be able to make this feature of it more and more prominent. As far as circumstances will permit, we intend that our practice shall correspond with our preaching. We hope as soon as possible to have a larger and more representative orchard, vineyard, and small fruit plantation, where students can have ample opportunity of becoming thoroughly familiar with the management of all the different fruits that can be given in this section. These, combined with our lawn arboretum, vegetable garden, and greenhouses, will furnish excellent object lessons in all the different branches of horticultural work.

3. *Conducting experiments* that may be helpful to the farmers, fruit growers, and market gardeners of the province should be an important feature of the work at an experiment station of this kind, and we hope to make it more prominent in the future. No doubt the severity of the climate will make it impossible to experiment satisfactorily with many of the more tender varieties, but it should be gratifying to know that what is hardy enough to succeed here should do well over most other parts of the province. In that respect results obtained here may be a safer guide to growers generally than results from a more favored locality

Taken as a whole, the Horticultural Department at the college compares favorably in many respects with the best institutions of this kind on the continent, and with its bright prospects for improvement we hope in time to see it stand second to none.

H. L. Hutt,
Horticulturist.

Intensive Farming.

Discontent prevails in greater or less degree throughout the agricultural world. Not a grumbling, growling dislike to the profession, but rather a dissatisfaction regarding results, accompanied by an anxious watching and waiting for some welcome break in the rather murky horizon.

Where is the way out of the difficulty? Not simply in the energetic haste to specialize, as some are led to think. Specialties are good, but cannot now be pursued as once. High prices, with probability of continuance, are matters of yore. Narrow margins are rigidly pressed upon the farmer to-day. Exceptional minds, exceptional energy, and exceptional natural advantage alone warrant rigid special lines in agriculture: the general tendency of the times being towards mixed farming, which to the thinking mind is certainly the best for the majority. *And yet a change is needed somewhere in* present farm practice. We can no longer depend upon grain-growing, nor upon raising horses for U.S. markets, nor upon prime beef for Great Britain, nor upon any one special line to raise the cloud. What agriculturists throughout Ontario need to-day more than any other one thing—yes, infinitely more than all other things combined - is an intensified system of farming. We need more close thinking. Not more labor, but more skilled labor: not more stock, but better; not more feed, but more careful feeding; not a second driving horse, but better care of the first; and lastly, but in many cases chiefly, not more land, but less. Hiring unskilled labor and spreading it over large areas is the positive ruin of many to-day. Feeding large herds of stock on a given amount of feed may mean actual loss, while to a few head the same feed may mean actual gain. When barley was 80c. per bushel, he who runs might read results; but when it is 40c. true value is more likely to be placed upon discrimination and intelligence in raising it. When fall wheat dropped to 60c. per bushel men sooner learned the kind of land most suitable for its production, and what it actually cost to produce it. Many now know that it can be *produced at a cost not much exceeding 40c. a bushel.* To give a second example. Not till barley and wheat dropped to half their former prices did farmers know what it cost to raise a pound of pork, many declaring that pork on foot could not profitably be raised at less than 4½c. per pound. That it can be put upon the market at 3c. per pound, leaving a fair margin of profit, is now a known fact.

A consideration of these things leads us to see that a pencil and notebook are among the indispensable even in farming.

Rightly and regularly used, they may be made a check upon retrogression, an aid to sure advancement. How are we to know the cost of a pound of beef, of mutton, or of pork, of a dozen eggs, or a brace of ducks without careful reckoning in black and white? As I have stated, the average farmer of Ontario must and will follow mixed farming. The varied departments need careful and accurate management; otherwise the possible losses of one department placed against the possible profits of another will interfere seriously with the profits of the whole: and thus is it throughout the multiplicities of farm business.

One other point (and it is perhaps the foundation of all)

is the amount of land under cultivation. Much land and little available capital is a wrong state of affairs. It is at direct variance with the principles of success. It is really undeniable that profit in farming and the intensity of the system pursued are in direct interrelation.

Thousands of farmers throughout Canada to-day are land poor, both owners and tenants. If many owners sold half their farms and concentrated their work and intelligence accordingly, they would become richer, would have better farms, more cosy and elegant homesteads, more of the luxuries of life, more of its pleasures, and would themselves and families feel happier. With the tenant it would act in like manner. Tenants spread their fences over one hundred, one hundred and fifty, or two hundred acres, when fifty would ensure infinitely greater pleasures and profits. In the latter case, the watchword is concentration; in the former, aimless dissemination. Cultivation, stockbreeding and feeding, care of implements, selection of seed grain, etc., all come in for a share of the general neglect.

Intensive farming puts all bones and eggshells in the compost heap, while extensive farming allows the former to toss around the dooryard—food for neighbors' dogs—while to the poultry the shells act as an antidote to successful egg production.

Intensive farming houses stock before the first cold snap; extensive farming has not time until they have hardened a little by such experiences.

Intensive farming finds its best bank within its own borders, in better stock, underdraining, various labor-saving devices, education, books, etc.; extensive farming says times are too hard for such superfluities, better bank it for emergencies.

Nationally, intensive farming doubles or trebles the amount of profitable labor that may be put upon an acre, and thus makes a greater home market for its products; extensive farming results in a more sparsely peopled country, and hence is less able to have churches, schools, post offices, etc., at its door. Intensive farming keeps two head of stock where extensive keeps but one.

And thus is it throughout the length and breadth of the profession. Intensive farming is the basis of all permanent agricultural progress.

Exchanges and Comments.

THERE is no man so great but has some weakness even more predominant than his best greatness.

A LITTLE girl, seeing her father, who was a lawyer, honing his razor, said: "Papa, is that the knife you sharpen your cheek with?"—*Ex.*

MANY of our exchanges are good representative papers of the institutions from which they come, yet some are conspicuously lacking in matter of a readable and instructive nature. However, we do not wish to criticize too severely, as the objects which colleges have in view in the publication of a *college paper* often are entirely different. Some hold that the college is, as it were, "a little world by itself," having characteristics peculiar to it, and to it alone; and the college paper should be written for the purpose of giving to the "outer world" a glimpse into the various aspects of college life. Others contend that the benefits and emoluments derived from a college training are of necessity conducive to more or less of progress in the practical workings of after life, and that the object of the college paper should be to open up a channel through which the student, during this period of his life, may come in touch with the practical and busy world. The extent to which either of these two ideas prevails in the minds of those directly responsible determines, for the most part, the character of the periodical issued. Nevertheless, the staff of every college paper should strive to make their issues as instructive and as interesting as possible; and we look for a much-needed improvement in the near future in those from our greater "seats of learning," especially when they have the miscellaneous ability of a thousand or more students, and plenty of "gold oil" from which to replenish the attractive appearance, vitality, and instructive interest of their columns.

THERE is still, we are sorry to say, even in this enlightened age, a numerous class who believe that any one has intelligence enough to be a farmer. But those who are competent to judge can well afford to smile at such ignorance. They know that agriculture is at once an art, a science, and a business; that the researches of philosophers, naturalists, chemists, geologists, and mechanicians are daily contributing to the elucidation of its principles and to the guidance of its practice; and that, while its pursuits afford scope for the acutest minds, they are relished by the most cultivated. As an art it is, in every respect, beautiful beyond comparison; as a science it assists, strengthens, delights—in fact, lifts man into the accelerating heights of human excellence; and as a business it shares to the full in the effects of that vehement competition which is experienced in every other branch of industry, and has, besides, many risks peculiar to itself. The easy routine of the olden time is gone forever; and without a good measure of tact, energy, and industry, no man can now obtain a living by farming. It is desirable that this should be known, as nothing has been more common, in the recent past, than for parents who have sons too dull to be scholars, or too indolent for trade, to put them to farming; or for persons who have earned a competency in some other calling to covet the (supposed) easy life of an agriculturist, and find, to their sorrow, a harrassing and ill-requited one. W. J. B.

LOCALS.

Vipond.—"I see the lights of the city
Gleam through the rain and the mist,
And a feeling of longing comes o'er me
That my soul cannot resist."

Travis.—"Yon gray lines
That fret the clouds are messengers of day."

Laird.—"Hark! how the loud and ponderous mace of Time
Knocks at the golden portals of the morning."

Travis.—"We must try to get in before the first gong rings."

"If I only owned what is in that safe, I wouldn't wash pigs any more."—Henderson.

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