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# The O. A. C. Review

Vol. VIII.

ONTARIO AGRICULTURAL COLLEGE, GUELPH, JUNE, 1897.

No. 9.

## Editorial



THE May number of the Review was issued under difficulties owing to the fact that the most of the members of the editorial staff, were in the midst of a three weeks' struggle with the B. S. A. examination papers. But that ordeal has passed, the results have been announced, the successful candidates have obtained their coveted parchments and the unsuccessful ones have gone home to puzzle out the causes of their defeat. During the examinations the usual amount of kicking was done, and the wisdom of the examiners often called in question. These complaints had in many cases no good basis, for with one or two exceptions, the papers were only fairly difficult. The examiners would fail in their duty if they cheapened the degree by lowering the standard. At the same time it must be admitted that the examinations in the different subjects were not uniform; some admitted a large percentage of the class into first class honors, while others excluded all from obtaining more than a bare pass. There were cases also, where the best students were unable to cover fully all the questions in the allotted time, while those whose knowledge was more superficial covered the whole in a general way and so secured a better standing.

The amount of work required during the year in one of the special courses was by no means equivalent to that required in the others. When a student is compelled to spend five or six afternoons a week in the laboratory, while another spends only two, he is inclined to think that there is something wrong if the same degree is granted to each. These discrepancies we hope to see removed before another year by striking an average between the two, and rendering necessary an equal amount of work from all candidates for the degree.

With this our editorial duties on the Review terminate. Begun under ominous forecasts and continued often under difficulties, we feel a certain degree of satisfaction in having brought to a successful conclusion, Volume VIII of our college paper. The daily round of lectures and unremitting study necessary in the third year course,

leaves but little time for journalistic labors, and if at any time our efforts have fallen short it must be attributed to that cause. The Managing Editor wishes to place on record his appreciation of the able and hearty support given by the assistant editors. To Messrs. Ostler and Cass is due the credit for the agricultural articles, which have appeared during the year, while in the personal department we think the old boys will agree that Mr. Ross has done his duty well. Our Business Managers have also been hustlers, since we can lay claim to a greater number of paid up subscriptions than any previous year, and what pleases us more a larger dividend to share among ourselves at the end of the year. We feel sure that next year's staff will be able to take hold of the enterprise and achieve even greater success.

It is with a feeling of pride that we can look back over the present spring as an athletic season. After so much sickness and confinement as was experienced the past winter, the students, almost without exception, turned out upon the Campus to take part in some one of the many sports carried on there. Nor has this practice interfered with their studies to the extent of former years. The weather has been cooler and pleasanter, and all have been able to make the most of the short evening study hour. Of course, during these last days of June, all mental exertions of any depth are impossible owing to the presence of thousands of visitors every day, visitors who come here with the intention of seeing everything whether that everything may be public or private property.

To return to our former topic of athletics, we extend our hearty congratulations to the Football Team individually, and to the members of the Athletic Association in general for the great success, which they have achieved in this noble game. By winning the intermediate cup, they or rather we have at last placed ourselves in a position where our name has become known and through the name, so also the institution. How often, yet do we hear the Ontario Agricultural College spoken of as the Agricultural School of Guelph, or that still more offensive and misleading term, the Mole Farm! So it is our earnest hope that in the future, yet more signal victories may be won by the teams of the O. A. C. A. and we can then point with pride to the great success, which our students have attained both in the class-room and upon the athletic field.

## INSECT IN RELATION TO PLANT FERTILIZATION

### Thesis by Mr. S. D. Craig, Which Ranked Highest of Those Offered by the Second Year Class.

The subject of cross fertilization as accomplished by insects is of great interest and importance, not only to the botanist, but also to the entomologist; for to the habit of insects in visiting the different flowers, both insects and plants owe a great many of their present characteristics.

Nearly all the scientists who have taken up this branch of study have come to the conclusion that it is not in accordance with the laws of nature for one flower to fertilize itself, or to be fertilized by any closely related flower. This principle holds good in the animal as well as the vegetable kingdom.

Darwin expressed his view along this line in the words, "Nature abhors self fertilization." This conclusion is corroborated by the existence of great numbers of clever devices by which nature tends to prevent self-pollination and promote cross-pollination. The weakening results of self-fertilization also strengthen the argument in favor of cross-fertilization.

Darwin conducted a great number of experiments in this connection and invariably found that in the course of self-fertilization the plants lost their vigor and to a marked degree their fertility. An experiment on the species *Brassica oleracea*, showed that the cross-fertilized plants were to the self-fertilized in weight, as 100 to 22. In the case of *Iberis umbellata*, seedlings of a cross were to those of self-fertilization, in weight as 100 to 81, and in fertility as 100 to 75. Self-fertilization carried on for a number of generations shows a more marked difference between the cross and self-fertilized plants. In experiments carried on with the *Ipomoea purpurea*, the first generation gave a difference in height of one hundred to 76, and the tenth generation, 100 to 54. The loss in fertility is shown splendidly in Darwin's experiments with *Nolopentaria* in which thirty flowers were crossed producing twenty-seven capsules, while thirty-two which were self-fertilized produced only six capsules.

In some plants the necessity for cross-pollination seems to be still greater, the flowers being completely self-sterile. This is characteristic of some of the species of *Verbascum*; the pistils being entirely unproductive towards the pollen of that flower, while with the pollen of other plants it is quite effective. The flowers of *Lobelia fulgens* are also sterile to their own pollen while both pollen and pistils are efficient in relation to other flowers. This sterility is due to the sexual organs being too uniform to admit of any interaction and may be often overcome by changing the environments of one set of organs as placing them in different plants. This change gives sufficient variation to allow interaction. Just what this uniformity is botanists have been working some time to find out, but as yet it is not entirely understood.

Having noticed some of the reasons for cross-fertilization, let us consider a few of the ways whereby self-fertilization is prevented. One very strong preventive is having the stamens and pistils in different flowers, or even on different plants, as is seen in many anemophyllous plants. In some plants the stamens and pistils ripen at different times. Among these Dichogamous plants are a number of the Geraniums. Another preventive is to be observed in Heteromor-

phous plants such as the Primrose, where there are two kinds of flowers; one kind having the anthers at the top of the tube and the pistil about half-way down. In the other kind the order is reversed the stigma being situated superiorly. In this case the pollen from the short styled flowers, owing to the position it would take on the insect, would not fertilize any but long styled varieties. In some other flowers self-pollination is prevented by the anthers of the flowers turning away from the stigma and shedding their pollen in such a manner that it is almost impossible for any of it to fertilize the stigma. After having considered the reasons for cross-fertilization and some of the means by which self-fertilization is prevented, it would be well to notice the agents used in effecting fertilization. The most important of these are water, wind, birds and insects. Water plants are usually fertilized by water currents, while grasses, sedges, and usually trees are fertilized by the wind. The anemophyllous plants are usually characterized by the production of enormous quantities of pollen, leaving very little beauty or perfume, and no nectar. The bird which does the most in fertilizing flowers is the little humming-bird, which like the insect goes around from flower to flower in search of nectar. But by far the most important bearers of pollen are the insects, and without them many plants would cease to be reproduced.

In this connection it is instructive and interesting to note the uses of the different properties or organs which most flowers possess. The economists of nature have found that to ensure the services of any living creature, something of material benefit must be given in exchange for that labor. So to get the insect to carry the pollen from one flower to another, the plant secretes nectar which forms a great part of the food of the insect. This nectar is deposited in such a place that the insect cannot cheat the plant, but in getting the nectar it must also come in contact with the stamens and pistil of the flower. To enable the insect to find the nectar the flowers are supplied with perfume and color. Different flowers have different odors to attract the insects upon which they depend for their pollination. The Carrion plant for instance, which is fertilized almost entirely by flies and other scavenger insects, gives off the smell of decaying animal matter. This smell is so strong that insects have been known to be attracted for two hundred yards. Flowers fertilized by bees and butterflies have, on the other hand, very pleasant odors; the taste of these insects in this regard being the same as our own. The colored lines which ornament so many of our flowers serve as guides for the insect to the honey-sac. The color also attracts the insect and enables it to distinguish between different varieties of flowers. It may be here noticed that night flowers are usually white or pale thus having the best color to make them conspicuous in the semi-darkness.

The insects as well as the flowers have been modified so that they may carry on pollination to the best advantage. For instance, moths and butterflies have developed very long proboscides to enable them to reach the nectar in long-tubed flowers such as the Honey-suckle.

These changes in both insects and plants have undoubtedly been brought about by the slow but sure process of natural selection and the survival of the fittest. In this manner flowers that are the most attractive and give the choicest honey are almost sure to be fertilized while less inviting ones are left unproduced. Butterflies with short proboscides or other hinderances to their gathering nectar, though they may manage to exist for a time, become weakened and eventually

pass out of existence, their place being taken by those which are better fitted for the collection of their food. By this process many curious and interesting peculiarities have been evolved in insect and plant life.

In most cases the relation between insects and plants is one of mutual advantage; the plant depending on the insect for its pollination and the insect on the plant for its food in the form of nectar and pollen. But in some cases such as the *Drosera*, we find that the plant catches and feeds upon the insects and in a greater number of cases the insects feed upon the foliage or other parts of the plant.

The many contrivances by which the flowers secure the services of the insect in pollination are very interesting to study. A very ingenious form is seen in many of the plants belonging to the Labiatae. In *Salvia officinalis*, which belongs to that order, the tube is long and guarded by a fringe of hairs to protect the nectar from insects which are not large enough to brush against the anthers or pistils. The stigma hangs from the hood anteriorly, so that it is the first organ to touch the insect when it alights on the lower lip. The anthers of this flower are developed into lever like structures which are so placed that when the insect pushes its head down the tube, the pollen bearing lobe of the anther is swung down on its abdomen. Another mode of securing pollination is to be observed in *Eriogonum*, in which the corolla represents a bell with the protruding pistil as clapper. The eight anthers are connected laterally so as to form a ring and this connection closes up the only holes through which the pollen can escape. The bee, after having passed the pistil, which is almost sure to have taken some of the pollen from its back, disturbs the circle of anthers and causes the pollen to be showered on its body.

Many plants show a preference for certain insects and these are always the insects which are best adapted to their pollination. As an example, the flowers of *Antirrhinum*, which are specially suited to fertilization by the bees, are entirely closed and only bees have strength and knowledge enough to open them. A very interesting case is presented in the flowers of *Aristolochia* in which the pistils ripen first. Flies are the special favorites of this plant and the flower is modified to suit their requirements. The little flies, after having rubbed against the mature stigma, pass down the tube for the nectar, but by reason of a row of stiff hairs which point downward they are unable to return. They are held prisoners in that manner till the anthers ripen and discharge their pollen on them. Then the hairs shrivel up, letting the flies free to go to another flower. Flowers also show their choice between different insects in being open only when such insects are on the wing. Examples of this are presented in night flower, and such dismal flowers as "John, go-to-bed at noon," "Scarlet pimpernel," and others too numerous to mention. Some plants secrete nectar only during certain hours, that they may adapt themselves to the habits of insect.

Cases in which flowers have been modified to suit the customs of the insects are well seen in Dichogamous plants. Those pollinated by bees are usually protogynous and those pollinated by wasps protogynous. The reason for this difference is that in gathering nectar from a bunch of flowers the bee starts at the bottom flowers and works up, while the wasp starts at the top and goes down. Thus those fertilized by the bee, the bottom flowers ripening first, would have the mature pistils at the bottom of the bunch where the bee begins, then as she got to the top, she would get loaded with pollen for

the ripe pistils at the bottom of the next cluster. In protogynous plants however, the pistils at the top would be ripe while the lower stamens are shedding their pollen. Thus it will be noticed is particularly adapted to the habit of the wasp in visiting the topmost flowers first.

Besides plants catering to insects, insects adjust their ways to suit conditions. They arrange their visits to flowers at a time when they are open and secreting nectar. The great activity of insects may be shown by the fact that in fine weather a bee often visits over twenty flowers a minute, and some flowers are visited at least thirty times a day. Nearly every flower is examined once a day by insects. A very interesting and important fact has been discovered in relation to the habit of insects in visiting flowers of one species as long as possible. This makes a great saving of pollen; for if the insects went about promiscuously from one kind of plant to another a great deal of pollen would be wasted on pistils towards which it is sterile. The closing of flowers during rain, dark days, and night also helps to prevent the waste of pollen, which cannot be made use of in fertilizing other flowers.

A very interesting phenomenon is to be observed in regard to the partiality of certain insects for particular colors. We find that flowers fertilized by miscellaneous small flies are invariably white or pale; those depending upon beetles are nearly always yellow. Bees and butterflies are usually attracted by red, purple, lilac, or blue flowers. A certain plant in South America, called *Santana*, changes the color of its flowers from time to time, and the different kinds of insects which frequent it, wait till their favorite color comes before they visit it. This proves beyond a doubt that insects have the power of distinguishing colors. Their sense of smell is also very highly developed as is shown in some of the illustrations given above.

To sum up the whole subject, self fertilization produces certain weakening results, and to avoid these deformities, nature has modified insects and plants, by the process of evolution, so that the pollen from any one flower stands very little chance of fertilizing the pistils of that flower or any closely related flowers. At the same time fertilization is carried on as economically of pollen and with as little expenditure as the plants energy as possible. Of course I do not mean to say that no flowers fertilize themselves for they often do, but as a rule self fertilization takes place under difficulties and cross fertilization is given all possible chance to take place.

### Progress.



WHILE no extensive improvements have been made about the College since the building of the chemical laboratory, and the engineer's residence, yet much work has been done in the different departments which would be of interest to our readers, particularly the ex-students. As previously stated, the construction of a new reservoir is one of the projects which the authorities have in hand this summer. The industrious first and second year students are laboring daily at the excavation under the genial superintendence of the President or, in his absence, under the doughty Martin O'Donnell.

On looking over the farm proper one notices with pleasure the improved appearance of the fields. This is mostly due to the removal of many of the fences which hitherto divided the fields. Under Mr.

# THE O. A. C. REVIEW.

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Rennie's system many of them have become unnecessary, and during the past two years nearly all the cross ones have been taken away. The farm is now divided into eighty-acre fields instead of twenty-acre, as formerly. In addition to the saving of time and labor required to keep fences in repair, there is a gain of land, and a dangerous source of weed propagation is removed. When it is not desirable to pasture the whole of any one of these fields the cattle may be easily confined to a part by a portable fence, which can be quickly erected for the purpose.

The cold, wet weather of the spring has not had any bad effects on the field crops except the corn, which had to be re-planted. The meadows show a luxuriant growth of clover and timothy, giving promise of a crop equal to the phenomenal yield of last year. But the conditions favorable to the growth of vegetation have also brought into prominence many weeds which were thought to have been eradicated. Shepherd's Purse and White Cackle are very conspicuous in some of the fields.

In the horticultural department a new step in advance has been taken by Mr. Hutt, and a new orchard of some 600 trees has been set out in field 13, adjacent to Stone's corner. Ninety varieties of apple, forty of plum, thirty-six of pear, and twenty-four of cherry trees, procured from Canadian nurseries, are included in the list. As the wet season has been very favorable for transplanting there is little danger of failure unless some of the varieties are naturally unsuitable for the locality.

In the past much annoyance and delay has often resulted from the lack of close communication between the different departments of the institution. Judging from the number of telephone wires which have been strung lately, extending in circuit through each of the departments, this trouble will soon be removed. Each building of importance is now connected with all the others by a separate wire. In this way no central office is required and the person wishing to communicate can do his own switching off. Mr. Putnam is already gaining in flesh at the prospect of being spared from some of his innumerable errands.

## A Review of Reviews.

Sometime since we conceived the idea of writing a history of our journal from the date of its first publication to the present time. That part of the work was easily accomplished, but when it came to the tedious task of tracing the whereabouts of those whose brains and pens have placed the Review in its present enviable position, we became entangled in a network of difficulties, and almost despaired of a successful conclusion. However, a careful search through old registers and mailing lists has disclosed a few clues, and by following these with a determination to get all the required data for our sketch, most of the ex-editors have been located.

In the fall of 1889 it was thought that the addition of the third year to the course had given a sufficient distribution of the work on the curriculum to allow the students to undertake the publication of a College paper, and so after considerable work and trouble the first number made its appearance, bearing the date November, 1889. The staff consisted of H. H. Dean, Managing Editor; C. A. Zavits, Agricultural; S. N. Monteith, Personal; C. F. Whitely, Local; J. Gelling, Exchange; B. Sleightholm and J. Harcourt, Business Managers. Most of these men are too well known to require mention here. Mr. Gelling is ranching in Manitoba, Mr. Sleightholm is farming in Peel county, while Mr. Harcourt is one of Lincoln county's leading sheep breeders. These men labored under very great difficulties, for they had to work against the indifference of the students, the lack of patronage from the ex-students, and the distrust of the advertisers. They published an excellent paper, however, and at the end of the year left the enterprise on a solid basis. Mr. Dean's editorials were written in his usual forcible style, and were the leading feature. He never posed as a humorist, but nevertheless he perpetrated a huge joke at his own expense, when in one of his productions he speculated upon the possible successor of Prof. Robertson in our Dairy Department, apparently not dreaming of his own chance for the position. We quote:—

"Who his (Prof Robertson's) successor will be has not yet been determined, but several are doubtless aspiring. While we do not wish to discourage anyone from soaring aloft, yet we would have them consider that

"As in a theatre the eyes of men,

After a well graced actor leaves the stage,

Are idly bent on him who enters next

Thinking his prattle to be tedious.

"Even so with much more contempt men's eyes may be dreamily fixed upon the coming professor and their ears wax dull with heaviness from hearing his roaring all the day long."

The men of 1890-1 had a less laborious task than their predecessors. Mr. Whitely was chosen as Managing Editor; Mr. H. L. Hutt, now our horticulturist, was Agricultural Editor; Mr. W. J. Palmer, now in the Kensington Dairy School, Toronto, had charge of the Personals, and for the first three issues Mr. J. C. Harris, now of Westholme, B.C., edited the Locals. Mr. Harris' departure from the College, however, necessitated the appointment to that position of Mr. F. A. Wilkin, who is at present taking the course in mechanical science at the McGill University. Mr. Harry Field, now a prosperous dry goods merchant in Cobourg was entrusted with the Exchanges; while R. S. Shaw and R. N. Morgan were Business Managers. Mr. Shaw is now lecturing on Animal Husbandry at St. Anthony's Park, Minn., and Mr. Morgan is superintendent of the Louisiana station at

Andubon Park, New Orleans. The year was one of steady progress and a fair degree of success was achieved.

For 1891-2 our Bacteriologist, Mr. F. C. Harrison, was Managing Editor. The Agricultural department had a second editor appointed and three business managers were deemed necessary. The advisability of this increase in numbers is doubtful but it has been followed every year since. D. Z. Gibson, now president of the Experimental Union, and W. L. Carlyle, of the Dairy branch of the Minnesota Institute corps, were in charge of the Agricultural page; G. F. Marsh, who is now farming at Thornbury, Grey Co., managed the Personals; R. Shaw was Local Editor and W. L. Haight of Wellington, Prince Edward Co., wrote the Exchange page. H. L. Beckett, R. Harcourt and T. J. Hurley were the financial agents for the year, men whose present positions are too well known to require further mention. The success which these men have attained since was not foreshadowed, however, in their work for the Review, for they ended the year with a deficit. Mr. Haight left for California in the spring, and Mr. G. E. Day filled the place for the remaining months.

In the following year the new staff made strenuous efforts to cut down expenses, and at the same time to keep up the high standard of former years in reading matter. They succeeded under the skillful management of Mr. Day, who was managing editor. Messrs. R. S. Shaw and A. McN. Soule were the agricultural editors. The present position of these men has already been noted on the personal page of the Review during the past year. Mr. F. C. S. Carpenter, now Deputy Sheriff of the Rainy River District, was local editor until Christmas, and it is safe to say that under him that department reached high water mark. His illness caused him to give up his course, and Mr. C. A. W. Hamilton, now in the employ of the Virginia Cheese and Butter Co., of Richmond, replaced him. Mr. S. G. Bell, of Qu'Appelle, N.W.T., looked after the personals, and Mr. L. W. Eaton, now at Austin, Man., wrote the exchanges. The business managers were Mr. H. Story, now a leading horse breeder at Picton; Mr. J. J. Ferguson, of Lanark county, and Mr. Jas. Atkinson, who has recently left for Iowa.

1893-4 saw further improvement, an assistant managing editor and two local editors appearing on the slate. Mr. J. J. Ferguson was in the manager's chair, while Mr. W. McCallum, at present of the Bacteriological department, acted as assistant. Mr. F. J. Sleight-holm, of the Strathroy Dairy School, and Mr. J. B. Spencer, of the Farmers' Advocate, were agricultural editors. Mr. J. W. W. Widdifield, now a leading farmer at Siloam, Ontario county, and Mr. G. A. Robertson, a promising St. Catharines' horticulturist, had charge of the locals. Mr. John Buchanan was personal, and Mr. W. J. Brown exchange editor. Mr. Brown has lately been appointed assistant director of the Young Men's Christian Association College in Chicago, the largest institution of its kind in America, having an enrolment of 1,291 students in its literary, scientific, commercial and industrial departments. Messrs. F. Caldicott, A. E. Simpson and W. A. Kennedy were business managers. The two former are engaged in farming in England and in Prince Edward Island respectively, while Mr. Kennedy is assistant chemist here in Prof. Shuttleworth's absence.

In 1894-5 the addition of a colored paper over and some other improvements made a decided change for the better in the appearance of the paper. Mr. Kennedy was elected for managing editor, with Mr. C. F. White assistant. Mr. White is now editor of the Western

Architect and Builder in Cincinnati, O. The agricultural editors, A. A. King and J. W. Widdifield, have both been noted in recent numbers of the Review. Mr. King is manager for the Delta Creamery Co. at Ladner, B.C., in which capacity he has been remarkably successful, the business having doubled in one year under his careful supervision. The other members of the staff for the year were: P. F. Paterson and L. W. Lang, local; C. J. W. Edelsten, personal; J. F. Clark, exchange; R. Macouachie, athletic; W. G. Campbell, J. D. McPhailand A. Kipp, business managers. Mr. Edelsten, of Leamington, is the proud possessor of what he considers the best 20 acres of peach land in Ontario, the greater part set out with peaches, plums and small fruits. Mr. Campbell is studying for the ministry, while Mr. McPhail follows the profession of his choice—agriculture.

Concerning the members of the 1895-6 staff, it would be superfluous to give in detail their names and present positions, since the personal page has given close record of their whereabouts during the year, and the successes which some of them have scored. H. D. Kewley, business manager, visited us the other day and renewed old acquaintances. Mr. Rothwell, since leaving the O.A.C., has been pursuing a course of study in preparation for the Methodist ministry.

A careful investigation of the complete list of ex-editors makes apparent the fact that they were the best students of their respective years. There have been in the seven years reviewed six gold medalists seven silver medalists, four second silver medalists and thirty-two B.S.A. graduates on the Board staff. The success of the men since leaving the College is noteworthy, everyone of them being comfortably situated, and with a few exceptions, either directly or indirectly connected with agricultural pursuits.

## Locals.

Born to ra!  
The man that kicked the football  
Has stolen the cup away from Brantford.

—o—

Excursionist—That is excellent cheese, the best I ever tasted.  
Waiter—Yes, it is made in our own dairy. We know how to make good cheese here.

Second excursionist I don't like your cheese; it tastes rank.  
Where did you get it?

Same waiter—Oh this is not our own. It's some we bought in the city at a bargain sale.

—o—

New bulletins to be issued shortly:

"The law relating to fines," by Murlock.

"The Moral Effect of a Cold Water Bath," by a city chap, name unknown.

"The Uselessness of Exerting Oneself this hot Weather," by Calvert.

"The Economic Importance of a certain First Year man, and his right to enter the front door," by Wagg.

"Studies in Embryology of Gallus domesticus: a resume of numerous experiments conducted in the O.A.C. dining hall."

Moonoy (in Botany)—The Asclepiaceae—oh, yes, the Milkweed family; exudes a milky juice and has a papoose in the seed.

—o—

Whigham (lecturing on Electricity to 2nd Year) in engine room:

This, gentlemen (pointing to fire pump) is the generator. The current passes from it to the motor here (motioning toward engine). The motor as you see runs the boilers, which provide steam to heat the College, and also turns the dynamo there in the corner." (The listening students were seized with peculiar fits at this point in the lecture, and many have not yet recovered. Unfortunately, the remainder of the lecture was lost.)

—o—

Echos from the Court room.—Charge against the prisoner: That on or about the sixth day of June, in the year of our Lord eighteen hundred and ninety-seven, Jagoo, the boaster, did felonously, villainously, and with intent to do injury to the sense of smell of the servants, cast from the window of his chamber, and into the window of the hall opposite the aforesaid chamber, and commonly known as the servants' dining hall, one or more of those products of the descendants of the prehistoric fowl which woke Noah every morn in the ark and which are commonly known as chicken-buds, for the purpose of obtaining revenge on the lady or ladies who prepare the daily repasts for the students' body and their tyrants, for the up-to-date manner in which the aforesaid persons dished up the aforesaid chicken-buds.

Murlock—"Was not an eye witness of the throwing of the egg, but saw it pursuing an erratic course towards the servants' hall."

Wilson—"Prisoner is a pretty nice fellow, though quite equal to the trick, as he has raked my bed. We are friends, and have smoked the pipe of peace together. We are not rivals in love, as I do not care for butter or cheese, and long not for the "inside track."

Canning—"Am sure the prisoner would not take another man's eggs, unless the man wasn't looking, and know that prisoner always ate his full ration of eggs at the table. Do not know the age of the egg, but was pretty sure it had reached maturity, or else prisoner would not have thrown it away."

Sentence pronounced by Judge Gamble. The prisoner having been found guilty by the jury, I command Mr. Jagoo to stand on the table, in the middle of the room, while Chief Constable McCalla pours two jugs of cold water down the region of his spinal column.

### Holding the Fort.

Ye Argument.—A Lower Panton boy within a locked study discourseth as follows, after his own simple fashion, to several students, who seek to gain admittance therein, being uninvited visitors from a rival "street":

Oh no, it's not a bit of good to batter at the door.  
You will not gain admittance here, I told you so before;  
I'm left in charge by Allison, who means to have a "feed."  
And knows he can depend on me as destitute of greed.

Four or five have been invited to be here in half an hour—  
Now, Thompson, keep your temper, I'm afraid its turning sour:  
I remember how the other day you kicked me on the shin,  
It's ten to one you'd bag this cake if I should let you in.

What's that you say? You have some nuts you'd like to give to me?  
That isn't good enough, my boy, to make me turn the key.  
Ah, Schooley! so for me you wish to fetch a pot of jam?  
Unnecessary, thank you, I'm contented as I am.

And that reminds me, Schooley, as we're talking about tuck,  
A guest of Allison to-night is in the way of luck;  
It really seems a pity that you cannot see the show  
Of apple-sauce and prunes in pots all stuck up in a row.

There are half-a-dozen tins of "sorts" (enough and no mistake),  
With sardines, biscuits, honey, and a ripping kind of cake!  
You see there isn't any need of jam from such as you—  
Besides, this party is select, and limited to few.

What! trust you here inside a bit, to show I am not mean?  
Whatever do you take me for? I'm not so jolly green!  
There are several of you waiting in the passage I can tell,  
And if I let you have an inch you mean to take an ell.

You offer ten or fifteen cents to do as I am told?  
Not even for a quarter is my virtue to be sold.  
And then you come from Upper Hunt, and after knowing that,  
The fellow that would trust you would proclaim himself a flat.

You'll kick me, will you? Wait a while, our men will soon be here,  
You'll very quickly scatter when they take you in the rear.  
Who stole our notes, and tore the straps from borrowed pairs of pads?  
I'm glad I'm not a rowdy lot of low Huntonian cads.

Of all the aggravating kids! Why don't you go away?  
With patience and politeness I have begged you not to stay,  
And yet you get into a sweat and simply lose your hair;  
Why can't you learn from me the way to speak a fellow fair?

Hello! I think I hear a sound of somebody below—  
Hi! rescue! Allison's the one to make them cut and go.  
Yes, that is he with all our chaps, and any danger's past—  
Ya hoo, you cads! who bolted off and funked it at the last.

## Personals.

Mr. J. L. Webster, '80, is the proprietor of a large fruit farm near Vernon, B. C.

Mr. Harvey Mitchell, B. A., of our Dairy School staff, has been appointed instructor in dairying in New Brunswick with Mr. J. F. Tilly, '86 dairy class, as assistant.

F. W. Buscarlet, '90, who has been ranching in the N. W. T. lately received news of a legacy left to him in England, and has gone home to secure it.

With the advent of the excursion season, we are favored with numerous visits of the old boys. Messrs. H. D. Kewley, '96; J. Loggatt, '90; G. Y. Payne, '95 and S. N. Monteith, B. S. A., '90, have been among those noted so far.

Mr. J. Atkinson, B. S. A., '96, leaves shortly for the West having resigned his position on the experimental department here to accept a situation in connection with the Iowa Experiment Station, Ames, Iowa, with a good round salary reaching up to the four figures. Thus another of our best graduates is lost to Ontario.

Mr. M. W. Doherty, B. S. A., '95, has passed his examinations for the degree of M. A. at Cornell University with the highest congratulations from the professors under whom he has been working. His thesis is of an exceedingly original character, and bids fair to overthrow many previous theories concerning the origin and development of the vascular bundles in the stem of Indian corn (*Zea Mays*). Part of his thesis is now being prepared for publication in the "Bulletin of the Torrey Botanical Club," one of the leading botanical papers in America.

The most of the members of the third year class of 1896-7, have dispersed to their homes. Seven were successful in obtaining the B. S. A. degree, while Mr. G. S. Henry, who dropped out early in order to prepare for another examination has added LL. B. to the B. A., he already possessed. Mr. Henry has bought a farm seven miles north of Toronto and is enthusiastically engaged in his new work. Messrs. Cunningham, Bell, Roge's and Oastler, have returned to their farms to test the value of the knowledge and training acquired here. Mr. Gamble announces his intention of going to Germany in October to pursue his study of chemistry for the Ph. D. degree, while Mr. Hodgetts is now working as assistant librarian.

## Athletics

OUR readers are already aware that the boys experienced but little difficulty in defeating the city team in the cup competition. Their next game was with Brantford Y.M.C.A., the winners of the coveted trophy in 1896 and when the 24th of May dawned, it was an anxious little band which left the College to try conclusions in the Telephone City. Lucas had to be left at home, but Law filled his place at half, and the rest of the players were in their usual positions. Play was called at 4 o'clock, on a field covered with long grass and of very uneven surface. From the very first the boys were at a disadvantage, but they did their work well, and at half time the teams were in the same position as at the start. The change of goals improved matters slightly, and before long the red and blue jerseys were swarming on the Brantford goal. Three hot shots struck the goal post as many times, and the ball came out again, but only to centre. The boys were having things their own way, but the long grass and rough ground made passing very uncertain. The next rush ended in a goal being shot by Elliott, but an off side being claimed, the referee, a Brantford man, allowed the home team to have it their own way. This was enough to dampen the ardor of any team, and the boys resolved to play defence. This plan was followed out, and the game

ended in a draw. On the whole, the result was quite satisfactory, and the rough treatment they received only steeled the boys' hearts to win the next game or die in the attempt.

### Second Game.

The morning of the second of June rose clear and bright, the clouds of the previous day had dispersed in honor of the occasion. It seemed that even nature favored the exercise of strong muscles and lithe limbs, by withholding the usual daily amount of rain. Breakfast and roll call were earlier than was the custom, so that the round of lectures might go on. At half-past eleven the boys were free. Brantford had arrived.

Around the edge of the field were ranged the College boys, strong in number, enthusiastic in their sympathy and provided with horns, whistles and other means of expressing it. Professors were there, who remembered and talked of the days when they played, and a few supporters of the blue and white were scattered here and there, to cheer the spirits of their favorites. The spectators were deeply interested, for were not their own friends, their own companions, their own students, on the field to struggle for the honor of city or college?

About 11 o'clock twenty-two young specimens of Canadian manhood faced each other on the rectangle. Not a sound was heard around the field. The referee's whistle blew and the college line rushed forward. Back and forth between the flying feet, spun the ball. The red bodied line worked its way onward, the Brantford defence were out played, out witted, the ball was passed to Mills, but he could not score.

For nearly fifteen minutes the ball remained in front of the visitor's goal but the result was ever the same, through it would not go. Another attempt, a snap, a sound of rushing wind, and a flat broken sphere flew through the air. The ball was burst; a few minutes for rest.

"Play," was called and now it was Brantford's turn. Dodging, checking and hard running carried the ball back to the home goal and the college boys held their breath. But before that goal stood two giants of the game, the one, short, thick set and cool, the other, long thin and active; the ball was stopped and driven out. Back it came, a quick shot, Morrison was there but it was too swift to hold, it was one of those moments that decide a game. McSpornan sprang in, and the ball rolled through. Luck was against the wearers of the red and blue.

The teams again lined up, Brantford determined to keep the score as it was, the O.A.C. boys determined to win. Now for one good rush or a swift, strong kick! Time. The first half of the game was over and the College was behind.

After ten minutes' rest the teams lined up again. The wind seemed to make a difference, for, from the first, the play was in Brantford's ground. Elliott, ably supported by his companions on the forward line, worked hard, but the Brantford men knew the plucky centre forward and left no opening. Time went by and still the score was the same; everything was against the boys. A shout, far sounding and piercing, rolled across the field, from the throats of the College boys. The effect was electric, new courage, dash and vigor seemed to take possession of the breasts of the eleven, for they realized afresh that



the eyes of their opponents were on them, and that they had their support in feeling if not in a fact.

The pace was increased dash after dash, was made, with no effect. Brantford massed her men. The whole College team moved forward, the defence ably supported the rush line. A strong, accurate corner-kick by Parker, a grove of swaying legs, a crowding of flesh, the ball shot through, and the score was tied.

Play was resumed, the mimic war went on, the twirling ball sped to and fro, now straight now angling across the field, seeking for a point of vantage. The College team tried repeatedly, tried hard, to win their laurels and prove themselves worthy of the confidence placed in them. It was useless, time was called, the game was over, and the score was one to one.

### The Final.

The final match was played upon our own campus on Saturday, June 12. Through a special appeal into our hearts and pockets, sufficient money was collected to defray the expenses of the visiting team. So when the game was called at 12 o'clock, greater interest than ever was shown in the contest. As students we had paid to bring the Brantford team to our midst, and consequently we felt a natural desire to see them beaten before they returned home. After two such matches as had been played before, it was expected that both teams would put up star games. That such was to be the case, became evident immediately after the whistle blew. Though having the advantage of wind and sun, our boys were driven back again and again by their opponents' defence. However after many minutes of hard play, Elliott did the deed and scored the first goal for the college. Knowing that it was now or never, the boys in red and blue kept up a constant attack upon the Brantford home and again, despite the giant goal keeper, Hutchinson added another to the college score. The cheers that followed were a great source of surprise to the hundreds of visitors who thronged the campus. Before half time was called, Charles Morris made a hot line for a penalty kick and, of course, the applause from the students was deafening.

When play was resumed, Brantford now took the offensive, and by steady, careful work again succeeded in tying the score from a corner kick. Gaunt very cleverly passed the ball through the posts and several minutes later, by a long kick from the wing, August added the second goal to the Brantford score. Both teams now worked hard and the college supporters held their breath as the ball passed rapidly from one end of the field to the other. But again, the blue and red took the lead and Mills dropped the shot which brought the Intermediate Cup for the first time to the O. A. C. The game was clean and swift from start to finish and the college may feel proud that they have been able to overcome such a strong team as Brantford sent against us. The challenge cup, a very handsome piece of silver, is now in the possession of the Athletic Association where it will remain until the fall when the contest must be renewed.

## Among our Exchanges....

### Agricultural Education.

We know of but one branch of education that has a certain, definite job waiting for the graduate when he gets his diploma, and that is an agricultural education. The openings in any other profession are not equal to the demand, and will not be for the next twenty years. The farm boy, who, having learned the practical part of farming, having familiarized himself with the machinery and become qualified to handle farm animals as they are handled on the father's farm, will take a thorough course at the Agricultural College, will be just the kind of man, provided always he has the brains and the grit, that the world is looking for to-day. The Colleges and experiment stations will require the services of a great many educated farmers. It will not be many years until every line of railroad in the West will have an industrial department which no one can run who does not combine the theoretical with the practical. A railroad official told us the other day that they needed a man of this kind, and when we pointed out the kind of man required he said: "Why, that man would cost \$5,000 a year."—E..

### Smut in Grain.

At the Kansas Experiment Station the new fungicide, Ceres Pulver, for destroying smut in oats and wheat has been given a trial this spring. The fungicide consists of potassium sulphide mixed with small quantities of other ingredients, and is sold in the form of a soot powder. For application it is dissolved in cool water  $3\frac{1}{2}$  ounces of the powder to 10 quarts of water. This amount is sufficient for treating 100 pounds of grain. The treatment of the seed grain consists in sprinkling the liquid over the grain with a common water sprinkler, while at the same time the grain is shovelled over rapidly. After treatment the grain is kept not less than three days and should be stirred once or twice a day, and then the grain is ready for seeding. Jensen, the originator of the hot-water treatment for destroying smut devised this method also. As it is somewhat simpler it is thought that it may come into more general use than the hot-water treatment has.—Industrialist.