

Vol. VI.

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PRESIDENT.

The O. A. C. Review.


The Dignity of a Calling is Its Utility.

Vol. VI.

ONTARIO AGRICULTURAL COLLEGE, GUELPH, DECEMBER, 1894.

No. 3

EDITORIAL NOTES.

 FEELING that the Review has worn shabby garments long enough, and with a burning desire to appear more consequential than formerly, we have had it arrayed in a new suit of clothes. When it was proposed to have our paper enclosed in a cover the treasurer gravely shook his head. But on a more serious consideration of our finances it was found that something in the way of embellishment might be attempted with safety. Accordingly the O. A. C. "original man" was called to our assistance. Having been made acquainted with the circumstances of the case he kindly consented to help overcome the difficulty. After much serious thought and hard work a design was submitted which met with the approval of the staff, and now we are able to say that the Review once again appears within covers.

* *

Before this number reaches its readers the Experimental Union will have held another of its interesting and instructive meetings. For the past two or three years these have been held immediately after the Christmas examinations, giving the students an opportunity of enjoying the discussions without the harassing thoughts of impending exams. For some reason or other the date of these meetings has been changed, and now they are to be held right in the midst of our examinations. It seems to us that such an arrangement is exceedingly ill-advised inasmuch as few students will consider themselves at liberty to forsake their books at such a critical time.

We understand that the directors of this organization have gone to considerable expense in securing speakers from a distance who have risen to the top in the branches of agriculture in which they engage as specialists, and who are in a position to give sound advice in their branches of agriculture. It is hoped that the directors will see their way clear to return to their old arrangement and hold their meetings immediately after the exams.

* *

A few days more and we shall again be plunged into the happy holiday season. The swiftness with which time flies is remarkable. A short time ago we were making ready for our sojourn at the O. A. C.; now we are preparing for our going home for a time. Owing to the fact that we are compelled to take a long vacation in order to give the farmers a chance of hearing our professors at the various meetings of the Farmers Institutes of Ontario, we shall now have an opportunity of doing some work on our own account. To many this is

a great boon indeed, and we hail the four weeks vacation with delight. To others, however, the long vacation may prove a pitfall and a snare; for, without the usual term pressure in the way of lectures and exams, some may forget that all the while Easter is drawing near, and allowing themselves to be drawn into the whirlpool of holiday pleasures, be forever cast into oblivion at the next exam. However, we hope that consequences so dire may not fall upon any of us at this glad season of the year, but that all may meet again on January twenty-second after having spent a Merry Christmas and a Happy New Year.

AGRICULTURAL.

The Assimilation of Atmospheric Nitrogen by Clover.



THE many valuable properties of clover as a general purpose crop have never perhaps been so fully taken advantage of as at the present time. The increasing areas grown from year to year is an evidence that farmers are beginning to recognize its superior qualities and now in progressive agriculture a farm rotation without clover would, unless in exceptional cases be considered incomplete. Whether cut for hay, made into ensilage or used as green fodder an immense quantity of food is obtained and chemical analysis has shown it to contain quite double the amount of the most nutritious constituents found in other meadow crops. In its food producing capacity it is thus unsurpassed, but it is of clover as a fertilizer that we intend speaking more particularly.

It has been observed that though the clover meadow may have been repeatedly mown in the same season, and extensive quantities of vegetable matter thus removed, the soil is ultimately richer and in a better condition for the succeeding crop than as if a lighter and what would seem to be less exhaustive cereal or root crop had last been taken from it. Apparently the greater the draught upon the soil the more fertile it became. For a long while this phenomenon remained inexplicable. The interest it excited however led to a careful study of the subject and recent scientific investigations seem to have given a satisfactory solution of the question.

It was known that nitrogen is a predominant constituent of clover as it is also of all other leguminous plants. The problem was chiefly then to determine the source from which it derives its nitrogen. That it does not draw extensively on the soil nitrogen is evidenced by the fact that the soil together with the crop residue is generally richer

in that element after cropping with clover than before. The only other source must be the nitrogen of the air, but the theory had long been maintained that plants are incapable of assimilating atmospheric nitrogen. If this theory could be falsified or leguminous crops at least made an exception to it then the mystery would be unravelled. On the roots of all the plants of this order are found small tubercles caused by an organism in the soil the nature of which is not yet thoroughly understood. It was thought that perhaps this fungus on the root might have some connection with the appropriation of the free nitrogen of the air, and most of the experiments conducted had for their object the proving if possible of the correctness of this hypothesis. Seeds of legumes were sown in sand which had been previously sterilized by washing and igniting and to which had afterwards been added a solution of the substances necessary to plant growth with a very limited amount of nitrogen in the form of one of the salts. The quantity of nitrogen in the plants produced was far in excess of the amount of that applied to the sand and that in the seed taken together. Similar experiments were made with non-leguminous plants with the result of a very meagre growth and no advance in nitrogen above that supplied. It was also found in the case of the legumes that the greater the number of the root tubercles developed on any particular plant the greater was the appropriation of nitrogen and more luxuriant was the growth of that plant. It was observed however that, though these plants apparently possess the power of extracting the nitrogenous part of their food from the air, a small amount in the soil is necessary for the development of the bacilli which produce the root tubercle. Many independent experiments involving the same principles as those enumerated, though differing somewhat in detail, have been performed and the results were in every case approximately the same and the conclusions are that the assimilation of free nitrogen by legumes does take place, and through the medium of the fungus growth on the root, but the manner of the operation is not yet known.

As further proof of the correctness of the explanation given by science to this problem, a few of the common observations on the farm might be cited. It has been noticed that when a field has been sown with a mixture of grains one of which is a legume, say for instance peas and oats, the resulting crop was often nearly double what it would probably have been, had only one variety been sown. The same thing is observed in the case of the common meadow crop, a mixture usually of clover with timothy or some other grass, and is explained only on the assumption that the legumes and the other plants draw their nitrogen from different sources. We have already referred to the evident increase in the fertility of the soil while under a clover crop, due to the abundance of nitrogen stored away in the roots.

The question then has been explained scientifically and practically and it would seem that further argument were unnecessary. It is only fair to say however that a recent investigator, drawing his conclusions from experiments differing somewhat from those referred to, has discarded the theory that legumes assimilate free nitrogen by virtue of their tubercle fungus. On cultivating the organism independent of the plant he has observed a vigorous growth when supplied with organic nitrogen but a feeble development when only free nitrogen was available. He claims that the function ascribed to the root fungus, is performed by all the organs of the plant, and that this nitrogen assimi-

lating property is not confined to legumes alone, but is common to all plants in a greater or less degree. Should this prove to be correct it will not depreciate the value of clover as a nitrogen gatherer. It is not so much a question of how the assimilation takes place, the important fact is that it does take place and in no order of plants to the same extent as in the legumes. There is little doubt however that the explanation first given is the proper one.

Assuming then that clover has been justly characterised in the previous statements, let us draw our conclusions as to the practical value of the facts we have learned concerning it. Nitrogen is the most expensive ingredient of all our fertilizers. By growing clover systematically a needless outlay for this element may be obviated, and by a judicious application from time to time of potassium and phosphoric acid which are equally important but less expensive plant foods, excellent crops will be obtained and these not at the expense of a deterioration of the soil. We have noticed with satisfaction the increasing acreage of clover in Ontario, but it merits still greater prominence, and truly at this as at no previous time is it necessary that we, as Ontario farmers, should take advantage of everything that offers at least a measure of success. The primary question with us at present is how are we to operate successfully in spite of the many adverse circumstances which have of late years been threatening disaster to the agricultural interests of our province. We are certainly at a disadvantage. We have no longer, in the older parts of our province at least, the virgin soil to draw from, and new farming countries are being continually opened up to share our markets. We have thus presented to us the strange coincidence of a falling off of our products contemporary with a decreasing demand for the same. Can we then, with the comparatively impoverished condition of our land compete successfully with those newer and decidedly more fertile districts.

The principles involving an affirmative answer to this question must be based on economy. In the clover crop we can recognise a partial answer at least. By availing ourselves of the virtues which are ascribed to it we may economically restore the old fertility of our soil and then make it produce heavily without again exhausting itself.

J. W. W.

Bacteria Again.

IN the last Review we had our attention drawn to those forms of bacteria which directly affect the dairy products: namely those which are injurious and those which are beneficial to butter, milk, and cheese. In this article we will confine our attention to those species which attack organic nitrogen in soil and manures, converting it from an insoluble to a soluble form.

It will be almost needless to say that the fertility of our soils depends largely on the amount and character of the nitrogen which it contains. With this in view, let us look briefly at the origin of this organic nitrogen, and become acquainted with nitrification and the conditions favorable to it.

The great bulk of nitrogen contained in the soil occurs in combination with carbon and the elements of water forming the humic compounds of the soil. This nitrogenous organic matter of soils is a residue left by the partial decay of plants and animals, and may exist either in the surface or sub-soil.

The nitrogen of the sub-soil exists in small quantities and is im-

portant only as one of the sources of surface nitrogen, of course its importance depends much upon the quality of the subsoil. Some clay subsoils contain as much as 0.06 per cent. of nitrogen. The subsoil of alluvial deposits contains very valuable quantities, ranging, in some cases, as high as .8 per cent.

The surface nitrogen is of modern origin, being the result of growth and decay of vegetable matter in the surface soil. Take as a proof of this the analysis of prairie soil; the first foot contained .18 per cent of nitrogen; the second foot about .3 per cent.; and the fourth foot .042 per cent., showing that the tendency is for the nitrogen to be concentrated at the surface; and in a great many cases we find the line between surface and subsoil nitrogen quite sharply drawn.

What are the sources of nitrogen which we find accumulated in the surface soil? We have already noted that the nitrogenous matter is a residue of that previously existing in the plant; we have still to ask from what source did the plant obtain nitrogen? To this question there are three principal answers:

(1). That nitrogen is collected by the roots of the plants, from the subsoil, and deposited by the decay of that plant in the surface soil.

(2). That ammonia and nitric acid are carried into the soil from the atmosphere by rain, and being changed into nitrates enter into the composition of the plant, and are afterwards deposited as nitrogenous matter.

(3). The power which some plants have of utilising free nitrogen of the atmosphere. This power was at one time supposed to be confined principally to leguminous plants; but later investigation has shewn that other plants had also their power, and we have no doubt but that future investigation will locate many others which have their power to a certain extent.

The nitrogen tied up in this organic matter cannot be utilised until it becomes oxidised and changed into soluble compounds. The process by which this change is brought about is called nitrification. It is not a plain chemical oxidation such as might occur in the laboratory by means of some powerful oxidising agent. It appears on the contrary that the presence of a microscopic organized ferment is necessary.

The credit belongs to the French chemists Schlosing and Muntz for establishing by experiment the true nature of nitrification; but for much of the information in regard to the nature of these ferments and the conditions favorable or unfavorable to their development, we are indebted to the experiments of Laws and Gilbert. Their first experiments were conducted to find out the influence of Antiseptic gasses on nitrification. The result went to prove that chlorine effectually prevented the formation of nitrates. This fact led to the practice of applying salt to soils for the purpose of checking a rank growth of vegetation. Further experiments went to show that moisture, air, warmth, the presence of a salifiable base, and dull light were essential that their phenomena take place.

With these facts before us, the practical question presents itself; how can the farmer bring about these conditions in his soil? The answer to a great many farmers in Ontario would be; drain your farms. For an excess of water in the soil prevents nitrification by keeping the land cold, excluding air and destroying the right degree of moisture.

Nitrification goes on most rapidly between 95° and 98° F. One of its characteristics is that it can exercise its function at

a lower temperature than most organisms. Laws and Gilbert found that some nitrification took place at 37° and 39° F; but of necessity this was very slow. So we see that the evaporation of water from wet soils prevents the rapid formation of nitrates in the spring, when they are most needed by the growing crop.

In a saturated soil it is impossible for nitrification to take place because of the exclusion of air and the lack of a proper degree of moisture. In the absence of a proper quantity of air denitrification takes place; this is a reduction of nitrates to other lower forms, less available; and is especially noticeable in soil presenting this condition.

As was noted before, the absence of strong light appears to be another condition necessary; for nitrification is found to proceed much more rapidly where a soil is protected from the direct rays of the sun by the growth of a heavy foliage crop.

The amount of soluble nitrogen formed by this process of nitrification in some soils, especially those rich in humus, is very great; but in too many cases it is leached out and lost. It is this leaching which condemns the old and popular system of summer fallowing, which is beneficial in improving the texture of the soil and increasing the solubility of plant food. Its value depends much on the character of the season. If the summer is moderately dry then, no doubt it will be of considerable practical benefit; but on the contrary a wet fall means the washing out of large quantities of nitrates, leaving the soil about as poor as it was before. It is this risk that condemns the system of summer fallowing. The system of growing a one green crop to utilise the nitrates as they are formed is rapidly gaining ground, and I have no doubt when the farmer understands this fact fully, summer fallowing will give way to the more economic method of growing grain crops.

A. A. J.

(TO BE CONTINUED).

THEY WILL NEVER GO THERE ANY MORE."

Macpherson and Wilson, Macomachie too
Determined to see Osgoole Hall's rugby crew;
So started on wheels for far Hamilton,
Intending no doubt to have plenty of fun.

The safeties were hired and did not run well,
Macpherson swore his was as heavy as — could be,
Wilson, for loose screws, said his was a treat,
While the Englishman growled "There's no spring in the seat!"

These three *rolling* riders returned late that night,
And, oh! they were in a lamentable plight;
"Twas fine!" they each said, but woefully sore
Were — , but no, really I cannot state more.

The next day was Sunday, these brave youths, "lay low;"
Devoid of that factor we sometimes term "go";
And each in the dining hall caused us to stare,
By bringing a cushion to *place on his chair*.

JINAZING GROOMER.

A Harvest-time Trip to Manitoba.

Manitoba is interesting considered from many standpoints. The struggling European laborer looks eagerly towards this land of promise and freedom as a very El Dorado; the Socialist has an opportunity of noticing the results of some of his theories; while the patriotic Canadian hopefully scans the prospect of the development of this most advanced portion of the "Great Lone Land." And Manitoba is most interesting to the visitor at harvest-time: when, amid the rattle of binders and threshers and the stir of increased travel, business enterprise is at its height, and men calculate, buy and sell, for then the results of the long year are realized and plans for the future made and carried out.

One evening, toward the end of August, we boarded the C. P. R. steamship "Alberta" at Owen Sound, and after making the necessary arrangements prepared to enjoy the sail. The surrounding hills and summer sky looked peacefully down on the noise and confusion of the little world below; while the gulls, impatient of delay, mingled their cries with those of men to hasten our departure towards the setting sun. This sail from Owen Sound to Port Arthur is the most enjoyable part of the C. P. R. route. The bracing air, growing clearer as we journeyed, the rugged-looking bits of scenery, and a favorable sky made the time go all too quickly. The passengers gathered in groups on the sunny parts of the deck or read in the comfortable saloon, while some of us preferred to pace the hurricane deck, and so miss none of the scenery. The impromptu evening concerts were taken part in with the usual heartiness, and the most fraternal spirit prevailed. The first night was the roughest that had been experienced during the summer, although this but increased the enjoyment of our party. A hearty commercial traveller, whose acquaintance we made, enjoyed it so much that he called the experience of sitting on his upper berth during the rough weather with his feet dangling, the "poetry of motion." We reached the "Sault" the next morning, and so great was the traffic that we were four hours in getting through the canal. This delay, however, was scarcely a hardship, for it permitted us to land and see the town of Sault St. Mary, and gave us an opportunity of observing closely the many different kinds of craft which were continually passing us. That night we were crossing Lake Superior and the next afternoon approached Thunder Bay. Here the scenery is very wild and rugged, and gives earnest of what to expect in the much more wild and rugged Rocky Mountain region. Thunder Capeon the right as you approach, is bold, prominent and regular. It is the most imposing feature of the landscape and its nature changes and changes again as we approach it. The bay is very rough as we enter it, and the steamer meets with such resistance that her speed is sensibly diminished. Here we encounter the Campana, heavily laden and outward bound, and as she passes out of vision we follow her in imagination through her long night voyage. We land without undergoing that pleasurable sensation, so often mentioned, of being on land again; for the prospect of a railroad journey after so pleasant a sail is anything but pleasant, especially through such a desolate country as the next two or three hundred miles proved to be. Before dark we were off again, and a

severe thunderstorm added gloom to that forsaken-looking country. Blackened stumps, irregular rocks and monotonous hills were the only features of the landscape. In fact it was not until we approached the Prairie City next day that the real prairie country came into view. There was a transition from one extreme to the other on our way; first the trees became greener-looking and thicker, and water scenery relieved the monotony, then the trees again became scarce, sandy knolls appeared, and gradually the broad flat prairie. Two of us that night visited the colonist cars, and we were repaid for our pains by watching the preparations for rest made by the passengers. The colonists were not from the Old World but from Ontario, and consequently much more comfortable and at home than the wretched-looking occupants of the immigrant trains we sometimes see. The passengers seemed to enjoy the novelty of their wooden beds, so easily made, and accommodated each other with blankets, rugs, and other necessaries. On an upper berth slept a big burly fellow, his head resting on a small pillow, which was all the bedding he boasted of. However, it seemed that even this had been appropriated, for presently a small man, evidently in search of something, approached and recognised his property under our friend's head. The small man seized his pillow and tugged at it for some time without producing any effect on the heavy sleeper above, till at last with a final tug the pillow was won and the big man discomfited. We reached Winnipeg in the morning and stayed there for a day; and if asked to give an opinion on so short an acquaintance would pronounce it a "fine city" in every respect. From Ontario to the coast there is no place where signs of business prosperity and comfortable home life are so noticeable as at Winnipeg. The buildings are now assuming something like proportion to the immense width of the main street. In fact some of the finest buildings in Canada are here; and business is very active, the residences home-like, and the people noted alike for their healthy appearance and hearty hospitality. The old saying concerning Winnipeg that "The only way one can keep out of the mud is by stepping among the dogs' backs," was verified only in part: we were not inconvenienced by the mud, but noticed the dogs still there. The Indians use their dogs as small boys are supposed to here, namely to pull them around; and this is especially so in winter. It certainly looks picturesque to see an old man, who has travelled far through a driving snowstorm, ride past on his low sled, drawn by two patient curs harnessed tandem. But we must return to summer and our journey. Starting west in the afternoon, we passed through, before dark, one of the most noted wheat-raising sections of the West, namely the Portage Plains, which indicates the country surrounding Portage la Prairie. Here the road runs in a straight even line over the level country without even a railroad fence to break the sweep.

Late that evening our destination, Brandon, is reached, and we take leave of our travelling companions whom we seem to know so well, but who will travel on and forget us in a conveniently short space of time. We all know that railroad platform scenes are very much the same in a country well known, and possesses little interest to the ordinary observer; but the platform scene at Brandon gave indications of the Western country noticed at once by the stranger. There were bronzed farmers, rough and ready, on the look out for laborers from among the colonists, riders who had come, booted and spurred, from long distances, and some Indians hung aimlessly

*This visit being made in the year 1890, the conditions and systems of farming were somewhat different from those existing at the present time.

around the doors of the station unlike their wilder brothers farther west, who ply their trade of selling buffalo horns during the stay of the train. Brandon is a typical Western town, and may be said to stand or fall on the result of the wheat crop. At least this was the case a few years ago, for the farmer regulated all his transactions by the wheat yield, and the patient merchant, who often waited until threshing to balance his yearly accounts prospered accordingly; if the crop failed, few farmers were able to meet their accounts. There are some good buildings, notably a handsome post-office on the main street; but most of them in other parts show the usual indifference to architectural adornment noticed throughout the West. The frame houses which predominate may be likened to packing-cases in shape and often in size: and where some slight attempt at ornamentation is effected the result is often less agreeable than if the plain pattern had been adhered to. Another feature which is characteristic of a prairie town is the position of many of these houses. Little occasion for streets was felt at first and houses were scattered here and there without any special arrangement, and at any angle. The town is situated on the gradual slope of the southern bank of the Assiniboine River, and the C. P. R. runs parallel with the town as it does with all the other prairie settlements. If it were in my power to describe Brandon properly you would understand all the towns between Winnipeg and the foot-hills, for they vary only in size.

MARK TAPLEY.

Athletics.

NOW that winter has come upon us, there are not many sports we can indulge in, but we hope that when football is started again in the spring, there will be more enthusiasm shown than there was during last term. Owing to this want of enthusiasm, and a certain difficulty, which there seemed to be, in arranging foreign matches, the lovers of football found few opportunities for indulging in their favorite game.

The Association team is well up to the average of past years, the forward line being especially strong, and with more practice together, it ought to give a good account of itself in any match which may be played next spring. The Rugby team is also good, and when we remember the little practice the team got and that some members of the team were entirely unacquainted with the game it must be owned we did remarkably well.

The only Association Football match played, was a match between a junior team captained by N. F. Wilson, and the G.C.I. when the G. C. I. won by a score of two goals to one (2-1). Several other matches were arranged, but they failed to come off and Association seemed to be forgotten.

Some ambitious spirits in the town having organized a Rugby Football Association, Mr. Millichamp got together a team from the College to give them a little practice.

Two matches were played. In the first match we proved victorious by twenty one points to none (21-0) while in the second match we were again the winners with a score of (27-1).

A match with the *Lornes* of Toronto was arranged for Thanks-

giving day, but owing to their team having a match at Peterborough, they were unable to get up another team to bring down here, and we lost the chance of adding another victory to our record.

Association and Rugby must wait till next spring when, whichever of the two games is played, it is hoped some interest will be shown, and as many matches arranged as are agreeable to the authorities.

Next summer lacrosse, cricket and tennis are going to be played and we wish the teams success in any matches that may take place. In the meantime let us turn our attention to hockey. A Hockey Association has been formed down town, and it is proposed to organize a city league, consisting of five or six teams, which shall play among themselves for a challenge cup. Our team which ought to be good this year, instead of entering the league, so there will be no lack of matches, with the town teams alone. A hockey rink has been made on the College grounds, which will be open to all members of the Athletic Association, but will be reserved at certain times for the Hockey teams, in order to let them get the practice necessary. We hope the second team will get down to practice and endeavor to give the first some good games before any league matches have to be played. We wish hockey every success and hope both players and spectators may get every enjoyment from this game, one of the most deservedly popular games in Canada.

Personal.



WITH this number of the REVIEW we cordially extend a hearty Christmas greeting to all ex-students, wishing them a happy and prosperous New Year. We also take this opportunity to acknowledge the seasons compliments and many wishes of success to the REVIEW, that have been received. The Personal Editor invites still further correspondence from all former O. A. C. boys.

—o—

J. B. Spencer, B. S. A., '94, is now engaged on the staff of the *Farmers Advocate*.

—o—

F. Callicott, '94, intends to sail for England early next year.

—o—

Franz Graessar hopes to take the special Dairy Course.

—o—

G. A. Gillespie is now at San Diego, California.

—o—

After visiting the Guelph Fat Stock Show, students will be more than usually interested in news regarding W. W. Cooper who received his diploma in '93, for he is pre-eminently engaged in stock raising. He works with his father, and many of us are familiar with the name of the firm of Jas. Cooper & Son, importers and breeders of Shropshire and other sheep. Mr. Cooper comments on the immense practical utility of the live stock lectures, and closes an interesting letter by wishing continued success to the good work of the College, and the compliments of the season to the fellows now at the O. A. C.

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E. F. WHITE, Assistant Managing.
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J. W. WIDDIFIELD, Personal. L. W. LANG, Exchange
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Ex-Students are requested to contribute to our columns.

DECEMBER, 1894.

The O. A. C. Literary Society.



THE forepart of the gymnasium at the College was well filled on the evening of Friday, the 23rd November, to listen to an interesting programme, the main features of which were an address on Pope by Mr. A. A. King and a debate by the members on the subject of winter and summer sports.

Mr. King briefly reviewed the politics of Pope's time: the condition of society then, and the influence these had on the literature of that period, and discussed some of the noteworthy parts of Pope's two well known productions, "The Rape of the Lock" and "Essay on Man."

The Debate:—"Resolved that winter is a more favorable time for sports than summer," was in the affirmative ably debated by Messrs. Leghlin and Yuill, and in the negative as ably debated by Messrs. Dunn and Leggat.

Winter sports in the open it was agreed could only be indulged in by the vigorous with any degree of safety, while summer sports, including those common to the spring and fall, could be taken advantage of by old and young in the open air without the dangers arising from sudden change of temperature.

The vote of the meeting on the merits of the question was in favor of summer as the most favorable time for sports.

Notwithstanding the nearness of the Christmas examinations which at present all but fills the hearts and heads of the students, the gymnasium was very well filled on the evening of 7th December, to listen to a programme of unusual interest.

The ruling feature of the evening was the debate, the subject being, "Resolved, that the policy of the Conservatives is or has not been in the best interests of the country." The affirmative and negative sides were very ably argued by M. Doherty and T. F. Paterson

respectively, and the discussion which followed was somewhat lively.

The vote of the house was not taken on this question.

The miscellaneous part of the programme was well supplied by recitations by Messrs. P. B. Kennedy and F. Elford; a selection by the O. A. C. Orchestra and a short speech on Lord Byron by Mr. G. A. Robertson.

Nov. 30.

The Society meeting held on the evening of the thirtieth of November was well attended, it being known the subject of an open meeting would come up for discussion. Accordingly after the usual formalities the subject was discussed and the decision of holding such a meeting finally arrived at and as a result a committee was appointed to make the necessary arrangements.

An interesting programme was then rendered; the first being a song, followed by a descriptive speech by Mr. Wisnucko, on the rocky district of Muskoka. The debate, "Resolved, that the printing press has done more towards the advancement of civilization than the steam engine," was dealt with in the affirmative by Messrs. Irving and Wilson, and negatively by Messrs. Cunningham and Steele. After many spirited sallies of wit and wisdom, so intermixed as to leave a pleasing effect, by both the leaders and their supporters it was decided by the meeting that those supporting the affirmative had the best arguments. Mr. McKenzie gave a recitation after which the discussion on the debate was taken part in by Messrs. Lang, Kennedy, Rowe and Christian.

As the discussion is really the most important to the great body of the students of the whole programme, it is gratifying to those interested in the Society to see how freely the students take part and make use of this great factor in education.

A song by Mr. McGillivray followed by the critic's report, ended the meeting but not the pleasant affect which had been produced.

November, 16.

The meeting of this evening was fairly well attended, their being about sixty students present.

The minutes being read seven new members were nominated after which the following programme was disposed of. Mr. McGillivray gave a song; after which the College Glee Club gave one of their favorite selections. They were repeatedly encored and replied to it in a very becoming manner. Mr. Kennedy was then called upon to give an extempore speech on Microscopy which doubtless let some of the freshmen understand how death may come from a very unsuspected source. As the committee of entertainment believe in intermixing sense with nonsense and song with sense. Mr. Devitt was called upon to give a comic song. Mr. C. Ross then gave a descriptive speech on the North West which was very realistic, and entertaining enough to keep his hearers interested till the very last. The first extempore debate of the season took place to-night the subject was, "that mixed farming was more profitable than special." Messrs. Christian and Farrar supported the affirmative, while Messrs. Widdisfeld and Wilson were on the negative, and although this is a somewhat trite subject it was made both interesting and instructive. On the subject being thrown open for discussion much interest in the subject was manifested by the way the members took part. The opinion of the house showed that mixed farming was the most profitable, and the meeting came to a termination.

Locals.

Widdifield—If I should attempt to write everything I know I should never get anything done.

Prof. in Chemistry class—Now, Mr. Thom, don't think so hard: I know you are thinking hard, Mr. Thom.

Utter collapse of Thom's brain.

D. J. McPherson on this day, 10th Dec., 1891, sent home to his parents and friends in Glengarry a sample of the O. A. C. carryaway comfort cake. Mac. describes it as an oven burner and says he will give ten years of his life if he can procure a sweetheart who can bake such another.

Taylor to Payne—In what way does Mr. P— resemble Cæsar?
Payne—I give it up.

Taylor—

He hath brought many captives home to (O. A. C. funds) Rome.
Whose ransom (fines) did the general coffers fill.

Merritt to Prof. of Agric.—Are those Cotswold sheep descended from goats?

Prof.—No.

Merritt—I suppose it is hard to say what they are descended from.

The Professor's face twitched but he was silent regarding the subject.

At the present time, the College is besieged with admiring visitors. Among the number we noticed two healthy looking agriculturalists a few days ago in the gods of the live stock class room, looking down upon our worthy Veterinary's horse skeleton. After a lengthy discussion, they came to the conclusion that it was a giraffe and applied to McLennan for information on the subject. This he promptly gave, and on informing them that it was a *stomdary* they went on their way rejoicing.

—This youth first saw the light of day some seventeen summers ago in that far off coral island—Bermuda. Judging from his actions at present we draw on our imagination, and in looking back into the past we see his maternal parent's flowing hair gradually turning a silvery hue in her vain attempts to bring him up in the way he should go. At the age of sixteen it is thought he raised the already too high temperature of Bermuda and was therefore sent North in order to have a beneficial effect on our arctic climate. In his ascent he struck the O. A. C. and while in the Freshman stage, acquitted himself very creditably both in his studies and in raising some excitement now and again to relieve the monotony. Although but young he has a magnetic attraction for the opposite sex, and is able to

procure meals at all hours although the officers motto is, "eternal vigilance is the price of victory." As an expert swimmer he has no equal in the College, and seems to be aquatic in his nature, for now and again he tells some "fishy" stories regarding his meanderings in his native island.

We predict a bright future for this youth, and no doubt Bermuda will receive a valuable acquisition when he returns.

—struck time some twenty years ago and the Ontario Agricultural College about three months ago. His short acquaintance has won him a famous name both at College and in the city. Ever since he left the creeping stage, he has had (to use a Yankee slang expression) a strong hankering after the opposite sex, and since his arrival in Guelph has fairly paralyzed some of the Guelph belles, who vie with each other in trying to win one of his bewitching smiles. Unfortunately the love light that once beamed from his eyes is now somewhat dimmed by a pair of gold-rimmed spectacles. No doubt when he passes into the pupa stage, or second year, he will be somewhat dignified, and, on leaving with a handle to his name, will be a walking advertisement for this noted institution.

Knight (singing mournfully at a half-cooked piece of meat deposited on his plate for mastication)—

O, pardon me, thou bleeding piece of earth,

That I am meek and gentle with thy butchers:

Thou art the ruins of the oldest cow

That ever grazed on thy Peshinich plains.

The fire that tried to cook thee died of grief,

When it thy gristle, tender, tried to make.

O'er this rare piece now do I prophesy,

In which the microbes ope their ruby lip:

To beg the voice and utterance of my tongue.

The students, of thine owner, shall speak ill

And of the butcher who did shed thy blood:

Both shall be long by them remembered.

As men, who thanked thee not for years of service.

On Thanksgiving, a number of students who had more than the usual amount of sportive genius, concluded to spend the Day in hunting. Before they had gone very far, they spied something black running up a bare White tree. McPhail-ed to see the creature for a long time owing to the fact that he had been in a state of excitement owing to a Payne in his Gamble caused by a Pat of a Gadd. He Tye-ed his leg up, however, and, before Knight came on, was seen running across a Widdifield after a wild Gosh. When he had reached the other side, he found the gate Hard with Steele and had to blow his Fyle for help. His Cousins soon came to his assistance and cut a way through with their Roger knives, which they drew from their Shields. On he went, dashing over a Kidd who happened to be in the way, and struck a very large King bird with his Arms. Before he legged-it any Far-ter, he heard a Camp-Bell ring and thought it Smith's, but soon saw that it was N-a-i-smith. "Yui'llsoon be Dunn

out," says the boys to themselves, and so he was, and like a Christian, made straight for home and there found G. A. S. off down town. In the meantime, the other fellows, who had been standing in a Rowe, had discovered that their game was a speckled Thom-cat and Gibsome shouts and s-Kipp-ed away to a tall Hutt-on the river-bank. After mourning over their disappointment for an hour or so, they quietly set out for home. Before they had gone far, however, several of them unfortunately fell into a Brick-wall and got their Christies W(h)etter than they wished. They Wad-ly given anything to have been home now. Would not Mc-Laugh(l)in his sleep if he knew this? In the course of half a dozen hours they found their way to the College and were greeted with the far-heard College yell and relieved of their superabundance of game.

..

Last fall, the garden, under the control of Mr. Squirrel, was subjected to a thorough and scientific system of drainage. The main drain runs from the upper end of the garden along the side adjoining the lane and has an outlet at the road below. The remaining part is drained by about a dozen laterals running down the slope in an oblique direction, and emptying into the main drain at such an angle that the water will not be checked in its course and cause the drain to become blocked. The drains were sunk to a depth of about 3½ feet, and the best quality of tile put in them.

To those who are acquainted with the principles of draining, it was a sight well worth seeing. Seldom we see a field drained in accordance with theoretical principles, but here we see them carried out to the letter, and will, no doubt, result in increased quantity and improved quality of the garden products.

..

We are sorry to learn that Mr. Paterson, a second year man, has concluded to discontinue his course of study here to embark in a new sphere of life.

Since he entered his first year, he has always been looked upon by his fellow-students as being a valuable acquisition to his year. He has always made himself "one of the boys," and has taken great interest in all the Societies connected with the College, and will be greatly missed. We are sorry that he has decided to take such a step, for he has always been very successful in his studies; but his genial disposition and affable manner will, no doubt, ensure his success in the photography business into which he is about to enter.

Surely some powerful influence has been brought to bear upon him for he is not subject to sudden turns of mind.

..

The new syllabus, which call for three examinations on each subject during the term, is, no doubt, an improvement on the old plan. It adds to the amount of studying done heretofore, and prevents the tendency to "plug" at the latter end of the term. Many

of the students trouble themselves about them very much while others do not, among which number, one may be mentioned as proved in the following:

McCallan (gravely)—"We are going to have an exam. in Literature to-morrow, Elford, so you had better go and "plug it up."

Elford:—

"What can be avoided
Whose end is purposed by the mighty gods?
Of all the wonders that I yet have heard,
It seems to me most strange that men should fear,
Seeing that exams a necessary evil,
Will come when they will come."

..

— was born in the county of Glengarry, a land noted for the production of raw-boned sturdy Highlanders. After storing his cranium with useful knowledge in one of the High Schools of that county, he packed his duds and left for the O. A. C. He rose step by step and was given the 2nd silver medal in the 2nd year. Having an uncommon thirsting for knowledge and recognizing the fact that although he had taken a diploma and silver medal, there was something more yet to be learned, he emerged from his cocoon into the beautiful imago. He now holds the highest position in the gift of his fellow students, namely, Managing Editor of that famous journal, the O. A. C. REVIEW, which, under his directing hand, is undergoing some important changes and bids fair to become one of the foremost College journals. He is much respected by the students and officers of the institution, and, on leaving with a handle to his name, will not be a dishonor to his Alma Mater, where ever his lot may be cast.

..

The O. A. C. Fat Stock Show was held in the College halls, Dec. 12th, about 12 p. m. Owing to the inclemency of the weather and other unavoidable circumstances the show was not up to the standard as there was but one entry, a large, lean, lanky Yorkshire pig. It is rumored that it took a large number of students to assist in the entry, which was made by the side door. After the show was over, which was truly a laughable one, and the hall sweepstakes medal awarded by the janitor, the committee of management, consisting of Rowe, White, and Wianko, ejected the prize winner and she went on her way rejoicing.

We draw on our imagination and appoint officers for the following year:

Chairman—D. J. McPherson.

Secretary—D. McDougall.

Swine and Sheep Breeder's Committee—W. E. Butler, F. Parker, W. J. Thompson, P. Arkell.

Judge for 1895—J. Whetter.

Concerning How to Study.



HERE are various types of students. There is the school-boy, crawling "like snail, unwillingly to school," who hails every public calamity as a possible holiday; the young aspirant for academic honors, talking in a nonchalant fashion of the late hours he keeps, and hinting how little sleep he can get along with; the life-long student, whose ever-craving never-to-be-satisfied ambition reaches out after all knowledge, and demands from Nature and Destiny their deepest secrets. The first type is without doubt the most plentiful, since all pass through that stage: here compulsion is the main-spring of the mental activity. The second type seeks knowledge for the sake of the honors and advantages resulting from its possession; while to the third knowledge is sweet for its own sake.

But in all these cases, knowledge is the object sought, whether he seeks realizes fully the value of the object or not. And how painfully slow is the process of acquiring that indispensable boon! The little bird that hops about from limb to limb, and swims through the air with so ease and swiftness envied, and vainly imitated by man, reckoned the time given to its education by hours. Superior man plods painfully through years and years of study, and then is just beginning to discover how little he knows, and how seldom that knowledge can guard him from fatal mistakes. But how admirable is the final product! Man cannot fly, nor learn his lessons in an hour, but he can evolve from his laborious process of study inventions that can outstrip the winged winds in their flight, or tell the nations speak across estranging oceans.

If such have been the *results* of study, then the *methods* of study are worthy of consideration. To give a few practical suggestions along this line of methods is the purpose of this paper.

Method is essential. How common a sight it is to see a student plodding and plugging, plugging and cramming, honestly endeavoring to wrest knowledge from those arid pages! But the result is very discouraging, and he comes to the conclusion that he was not cut out for a student. It is quite possible that the real explanation of this failure is to be found, not so much in inherent dullness, as in not having any method or system. Hence there is a great deal of misdirected energy expended, with discouraging results.

One very common reason why better success does not attend really honest effort, is that the student goes to work too much at random. He has no definite purpose in view in reading a book. He has no clear idea of what he may expect to find in that book. It is not reasonable to attack a book on Botany, Geology or Chemistry in the same way as that in which a novel, or a play of Shakespeare should be read. In Science, we look for facts, laws and principles, and every new fact, or every new principle, should be seized upon by the attention. That is our only reason for reading the book. But in reading literary productions, we do not look for facts, but rather for some thing to appeal to our experience and knowledge of human nature; to our sympathies and our humanity. These differences must be recognized, and our attention fixed upon the *purpose* of the book before us, or else we shall carry but little away from its perusal.

The attention must be kept fixed, absorbed in the subject. This idea of the necessity of keeping the attention fixed is a very trite one, but is not sufficiently put in practice. A few minutes are given to

the work in hand, but in too many cases the will power is weak, and the mind is allowed to drift. A very great help toward keeping the attention steadily fixed, is to mark significant and important passages (if the book happens to be your own, or to write a brief synopsis in the margin of an important paragraph, or to jot down a few comments, criticisms, or conclusions of your own. The mind cannot wander when such a plan is carried out. This plan is also of great advantage when the time comes for review. The eye is caught by the marks or marginal notes, and only the important parts of the book need be read, whereas if the marks or notes were not there, the whole thing would have to be read in review. The idea of marking and reviewing is of course more particularly applicable to text-books.

It is not usually a good plan to spend a whole evening at one subject, unless specially interested therein. It is better to spend half-an-hour on each of three or four subjects, than two hours on one subject. If a student makes up his mind, in sitting down to read, that he will drop that book in, say, half-an-hour, he will likely bring all his attentive powers to bear for that short time, and can leave the subject at the end of the time allotted with the consciousness of having done something definite. But if he pores vaguely over a book for two or three hours, trying conscientiously but unsuccessfully to keep the attention fixed upon the subject, he will rise from his chair dissatisfied and discouraged. Even though the task be self-imposed, short hours are, as a rule, preferable to long hours and frequent changes advisable.

Students, as a rule, depend too much upon assistance from lessons and lectures. They too seldom think of launching out for themselves. They like to be *sponsored*. They have a horror of the dark and won't step into it unless taken by the hand. It does not occur to them to go by themselves into "fresh woods and pastures new." They do not, in plain words, read ahead of the work in class, and depend entirely on the lesson to give them their first idea concerning a new principle. Now this is all wrong. The student who knows absolutely nothing about the subject of a lesson before going to the class is likely to take very little away with him. He has nothing in his mind with which the new material can be assimilated; while the student who has read something about it beforehand knows at least what are the difficulties of the subject, and is prepared to ask intelligent questions. Lessons and lectures, especially for advanced students, should be largely supplementary. To some they are all in all of their beginnings of knowledge.

Such a course is fatal to self-reliance and originality. Until a student can, without assistance, prepare himself for intelligent examination on a subject within the limits of his capacity, he has not attained unto the end aimed at in education. He must depend upon himself, and learn to think for himself, through life, and where can he learn this self-reliance better than at school or college? Learning to be self-dependent is like learning to walk. The first timid step should be taken when there is someone by to keep the toddler from falling. We are bound to make mistakes in our first attempts; they should be made where they can be best corrected.

The critical faculty should be developed, too, as early as possible and can be developed only by original, independent thinking. Criticism, by the way, is not fault-finding, but consists in weighing, testing, comparing, valuing. It implies simply clear and accurate thinking, and that is the last thing that some students could be accused of. We must learn not to take everything that we read as indisputable. We must learn that some statements, both oral and written, requires considerable qualification before being accepted. A mere cavilling and quibbling spirit is, of course, to be avoided. But let us learn to have opinions of our own, and to take the opinions of others at their true worth.

This article has been written to meet practical needs, and the ideas have been suggested by observation and experience. Though the treatment of the subject may be rather dry and abstract, practical and earnest students will, it is hoped, find something in it which will appeal to their own experience.

“El Mudo.”



OWARDS the latter part of the year 183 , and on a fine autumnal morning, a scene of some dramatic interest was enacting in a field just outside a hamlet in northern Alava. Several companies of infantry and some cavalry were drawn up, the peculiarities of costume marking them as Carlist troops. At a score of paces in front of the line, a mounted officer whose richly embroidered cuffs showed him to be of high rank, was conversing with others of inferior grade. A short distance from the group and in charge of a guard stood a young man in the uniform of a cavalry officer, and farther in the background were assembled several women and persons in civilian dress.

“Valentin Royas,” cried the General.

The guard surrounding the prisoner opened its files and the young officer, advancing to within a few paces of the chief in command there halted and respectfully saluted.

“Valentin Royas,” you have been guilty of gross neglect of duty in allowing your picket to be surprised last night from want of vigilance. The court martial has condemned you to death, but not without a recommendation to mercy founded on your well proved courage and zeal. Your fault, however, must be expiated, and if I extend to you mercy it will be on one condition.” And beckoning the prisoner to draw near he leaned over and spoke a few words in a low tone. A strong expression of disgust came over the countenance of the young soldier. “I should be doing myself little honor in taking my life on the terms you propose.”

“There is no disgrace in serving the King in whatever way it may be,” said the General sternly. “Take your choice, however, that or death.”

“The latter then,” replied the young man doggedly.

“Order out the firing party,” said the General in a vexed, hurried tone to one of his aides-de-camp.

A piercing shriek was heard. There was a movement amongst the by-standers, and a young and beautiful girl broke away from those who sought to restrain her and rushing up to the prisoner, fell fainting into his arms. — *¡Todavía es tiempo!* “there is still time,” said the General, turning to Royas. “Poor Dolores,” added he casting a compassionate look on the inanimate form that the young man was sustaining.

Royas was deadly pale and the muscles of his face were working violently. He gazed intently on the lovely girl of whom the women had now taken charge and were trying every means to restore her to consciousness. At this moment she half opened her eyes and in a faint voice uttered the word “Valentin.”

“I accept,” gasped the prisoner.

Ten minutes after the troops were dismissed to their quarters and Royas was escorted with the General commanding the Carlist troops in Alava.

The Convent of San Domingo at Vittoria has of late years, like most edifices of its class in the north of Spain, been converted into barracks for troops. It was during the hottest part of the Carlist war that on an October evening, the massive portico was lit up by a large fire which illuminated the long corridor leading into the building. The retreat had not yet sounded and a number of the Queen's soldiers were grouped around the fire, singing, chatting and laughing,

so as to create a Babel-like din. It was during a momentary lull, that a small gap in the circle was filled up by a person who squeezed in, making himself as small as he could and extended his hands over the fire, on which he fixed his eyes with a vacant stare as though unconscious of being an intruder or of the presence of the soldiery. The new comer was a lad about twenty whose countenance of an exceedingly brown hue was rendered singularly inexpressive and stupid looking by a mouth constantly half open, and by the manner in which his hair was brought forward over his forehead, so low as to almost cover his eyes. He was dressed in the rough brown cloth which the Alavese peasantry manufacture themselves, with a broad brimmed grey hat placed at the back of his head.

“*Caramba!*” cried a happy looking Corporal, who, judging from the laughter which welcomed his most trifling sallies, was a wit of no small consideration.

“*Qui hav aqui!*” “Whom have we here and whence come? Assuredly he must be the Mayor of some city. Behold his sapient look and dignified manner of wearing his sombrero.”

The sneer was followed by many others from the soldiers.

“*Vamos! Camarada!*” said one seeing that the stranger took no notice of the jest for which he supplied the material. “You have taken a place at our fire and the least you can do in return is to give us some account of yourself.” No reply was made by the peasant, and the soldiers irritated at his obstinate silence, unsheathing his bayonet introduced its point into the seam of the peasant's jacket. But scarcely had the weapon found its way through the cloak, when the lad turned sharply around and in an instant the oppressor was disarmed and prostrate at his antagonist's feet. The soldiers pressed forward to help their comrade, but the stranger threw down the bayonet and burst into a volley of those inarticulate sounds which the deaf and dumb emit in their vain attempts to express anger or other violent passions. “*Es Mudo!*” (he is dumb), exclaimed the soldiers keeping back their comrade who seemed disposed to avenge his overthrow.

They now began to hold conversation with the dumb peasant by means of signs and gestures which he however showed little aptness in comprehending, and it soon became evident that the poor wretch was nearly an idiot.

The bugle call sounded and the soldiers hurrying into barracks for the night left the *Mudo* standing over the fire, from whence he finally bounced away.

The following morning, however, he returned and for many days after continued to pay long and frequent visits to the barracks. The soldiers amused themselves with his uncooth gestures, and at length became so accustomed to his presence that he began to share their affections with the regimental dog, and was as well known to the garrison as the Governor himself.

The month of December had set in cold and wintry, and with the exception of an occasional foraging party, active military operations were likely to be for some time suspended. One night, however, orders were given for the troops to hold themselves in readiness to march early the following morning. Several officers came down from the barracks and having ascertained that all was in readiness for the march, stopped for a moment at the guard fire to light their cigars.

“We shall have a better blaze than this to warm ourselves by ere twelve hours are past,” said a young Lieutenant.

“By the bye,” cried another, “How far is it to this powder

mill?"

"It is off the high road, but not more than five or six leagues distant from Vittoria. The roads are good, thanks to the frost, and if we start early, we may get there, blow up the place and return by noon."

"Hush!" said an old Captain with grizzled moustache. "You know not who may be within hearing, and though the gates are shut they say there are Carlists in Vittoria."

"Pshaw!" cried the young officer who had spoken first. "You are over-cautions. There is no one near but the men on guard and that wretched dumb idiot."

"Walls have sometimes ears," replied the Captain. "At any rate, all our secret expeditions for the last month or two have been failures. There is treachery within the walls. But it is growing late, so *Buenas noches, Senores!*"

"*Buenas noches, buenas noches,*" and the officers walked away to their respective quarters.

Scarcely had the sound of their footsteps died away when a head was raised slowly above the mass of confused forms lying huddled round the fire, and the black eyes of the *Mudo* peered keenly around. The sentry had his back turned and leaning on his musket; with noiseless step he crept along in the shadow of the convent wall, and arrived unobserved at a place where the wall, broken and crumbling offered an easy egress from the town. The *Mudo* dropped lightly into the shallow moat and scrambling up the opposite side, disappeared in the obscurity. A few hours after this a body of troops marched out of Vittoria, and after some hours reached the neighborhood of the powder mill.

In front of a thick wood of evergreen trees stood a well constructed building, having around it several cottages flanked with parapets. Here it was that powder and ball were fabricated in large quantities by the Carlists, and the military authorities in Vittoria hearing that no Carlist force of importance was in the vicinity, determined to send out a small column to destroy, burn and blow up everything and return to garrison.

Nothing stirred in the mill or adjacent cottages, at least so it seemed to the Christiano Colonel, as he headed the squadron which comprised his whole force of cavalry, and ordering the infantry to follow as fast as possible, moved forward at a canter. Arrived in front of the mill, he sent round half his cavalry to patrol in rear of the cottages, and then waited for the infantry, which arrived the next instant somewhat out of order and breath from the pace they had travelled. Scarcely had the word halt been given, when a single musket shot was heard and immediately from behind the parapets, from the building and cottages rose several companies of Carlist troops and a smart fire was opened on the Queen's soldiers, simultaneously a body of lancers emerged from the wood and charged the troop of hussars in rear of the cottages, and drove them in on the main body.

The Christiano Colonel to whose over confidence it was owing that his troops were in so perilous a position did not loose his head but forming his infantry into a compact column began to retreat steadily and rapidly hoping to get into the open country before the Carlists could get their men together. Then leaving the infantry in charge of the next in command he placed himself at the head of his cavalry and charged the enemy's lancers with such vigor that in spite

of their superior numbers they were driven back. But, while returning under fire to the main body a ball struck him in the breast, and the gallant but unfortunate officer reeled in his saddle and fell to the ground. His death was the signal for a general rout. The retreat became a scamper, and over the fields through heather, ditches and briars went pursuer and pursued, little quarter was given for the animosity between the two parties was then at its height.

At length the ardour of the pursuit diminished and few others than the Cavalry persevered in the chase. A young Carlist officer, splendidly mounted was far ahead of his men, and made himself remarked by his ferocity. He had broken his lance, but now made use of his sabre with deadly effect, turning a deaf ear to all supplications for mercy. He was within a score of yards of five or six Christian soldiers when they suddenly turned and levelling their muskets made a simultaneous discharge on their pursuer. Owing to a sudden bound of the horse, the bullets took effect upon him instead of his rider, and the noble animal fell, and before the Carlist could regain his feet he was in the power of the soldiers. In the ineffectual struggle to escape their grasp, the *boina* fell from his head and a quantity of long hair, lank with sweat hung over his forehead. The soldiers stared at him, then at each other and then again at the prisoner, with a puzzled look. "*Lo Es!*" (It is he) at length exclaimed one, "*El Mudo!*" they shouted simultaneously.

The Carlist officer smiled bitterly.

Early on the second morning after that which had witnessed the disastrous expedition to the powder mill, workmen were busy erecting scaffolding for an execution and it soon became known that the criminal about to suffer was the Carlist spy who had caused the recent discomfiture of the Queen's troops. Towards noon all the garrison not in duty was formed around the *plaza*, and a large crowd had assembled to witness the execution. On the scaffold was firmly fixed a wooden pillar, against which a bench was nailed. Two or three feet above the bench was an iron bar, bent into a circle, and which by means of a powerful screw could be brought with great force against the front of the post, so as to crush anything that might intervene. Two men were standing beside garrotte waiting for the criminal.

At length the prisoner made his appearance, strongly guarded and attended by a priest. His step was firm and steady, and after embracing his penitent, the priest stepped on one side, and the prisoner dropping his cloak, appeared in the uniform of the Carlist Cavalry, and snatching his *boina* from his head and in voice clear and sonorous as though he had been commanding his squadron:--

"*Viva Carlos Quinto!*" shouted he "*Mueren los negros!*" (Long live Charles V. Death to the negroes).

When by this action his face became visible, a suppressed hum ran through the lines of the soldiery and the words "*El Mudo!*" passed from mouth to mouth. Before this murmur had subsided, the prisoner had seated himself quietly in the chair.

The iron collar was adjusted around his neck, and one of the executioners gave a few rapid and vigorous turns to the screw. A crushing noise, reached the ears of the nearest bystanders, as the vertebrae of the neck were broken against the wooden pillar.

El Mudo had paid the penalty for his offence.

After the corpse according to custom had been left for some time exposed to the gaze of the multitude, it was removed from the scaffold

and buried outside the town. The following morning however the grave in which it had been laid was open, and the body removed.

In the center of a churchyard a few miles north of Vittoria is a plain slab of grey stone, which for a great part of the year is nearly undiscoverable, so concealed does it lie under the tangled profusion of red and white roses, which the village maidens have planted around. When, however, the fragrant but thorny barrier is put aside an inscription is visible. It is short and runs thus:

Valentin, 17 Diciembre.

Dolores, 23 Diciembre.

Poco lo sobreviva.

FICTION.

Exchanges and Notes from the College World.

Opportunity is success in the bud.

∴

"Thinking is comparing, assimilating, and appropriating."

∴

"He that really lives holds the past scans the future and utilizes the present."

∴

The University of Edinburgh believes in athletics. It has purchased a new athletic field at the cost of £9,000.

∴

The Vassar Literary Society had a debate on the question, "Resolved, that higher education unfits man for matrimony." It was decided in the affirmative.

∴

Their noonday never knows
What names immortal are;
'Tis night alone that shows
How star surpasseth star.

— *Cosmopolitan*.

∴

The following named Universities publish daily papers: Cornell, Brown, Harvard, Leland, Stanford, Princeton, and the Universities of Michigan and Wisconsin.

∴

The Students Journal, of Kansas State University, in reporting the football game between the Ottawa and State University teams, contains the following eloquent statements: "Slugging was freely indulged in. Cowan received a jar that rendered him unconscious for a time. Ugly Taylor presented a serious appearance

with a piece of his scalp gone; his hair matted with blood, and his face dripping with it." It also adds: "the game last Saturday was, as has been expected, a very good one."

∴

"Shall I brain him?" cried the harper,

And the victim's courage fled;

You can't, it's a freshman.

Just hit him on the head." — *Ex.*

∴

Resolved, That tennis is a more brutal game than dominoes. It always brings the players into court on account of rackets. There is a necessity for a *laté in* it, and consequently the players all serve their time. — *Orcl.*

∴

A GOOD EDUCATION PAYS.

1. In dollars and cents. All testimony of statistics agrees in showing that educated laborers of all ranks have better work and better wages than the uneducated.

2. In influence and position. Careful estimates make it certain that the chances of promotion to places of trust and power among men are almost two hundred times as great to an educated man as to the uneducated man.

3. In usefulness. The bulk of good work in the world—discovery, invention, government, philanthropy, and religion—is brought about by those who learn to think by study.

4. In enjoyment. Our pleasures grow out of what we are ourselves more than from surroundings. A well trained man sees, hears, and handles a great deal more of the world than an untrained one. All things do him more good, and so much because he owns them as he understands them. He always has good things to think about.

∴

ELECTRICITY FOR WEED DESTRUCTION.

One more beneficial use has been found for electricity. It is the destruction of weeds. The Illinois Central Railroad is the first to employ it for that purpose, in order to keep down the weeds along its lines of railroad. Not only has electricity been found serviceable for weed destruction, but the cost is much less than when it was done by hand labor. It has cost the company in the past about \$40 per mile to destroy the weeds. With electricity, five miles of weeds can be killed in an hour at a very small expense. A brush heavily charged with electricity runs along about eight inches above the ground, and every weed with which it comes into contact, however big and strong, is immediately killed, and turns black as if frozen. We shall hope to see a similar appliance in use on our country roads in the near future. — *Canadian Farm Journal*.

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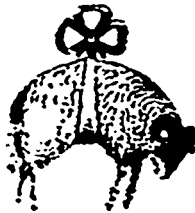
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