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THE DIGNITY OF A CALLING IS ITS UTILITY.

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OUR MOTTO.

At the top of this page the reader will notice large in clear type the *O. A. C. Review* motto: "The Dignity of a Calling is its Utility." No statement could be truer or more comprehensive; rightly understood no statement should be more inspiring; but, unfortunately, few statements are more liable to erroneous interpretation. The 'calling' or vocation to which obvious though tacit reference is here made is that of Agriculture. But the assertion is true of other vocations also: Utility must be the final test and measure of the dignity or worthiness of any and every occupa-

tion to which man may turn his hand or brain.

But what is Utility, and how shall we measure it? Is the utility of a man's work measured by his wages in dollars and cents? or by his output in material things? or by his reputation? or by his physical or intellectual prowess? If so Life is a mocking enigma. Milton sold his immortal *Paradise Lost* for £5; many of those to whom society is most indebted have drunk the cup of bitter poverty to the dregs, and have at last succumbed to its power; and the wages of the grandest Life that illuminates

the dark pages of history was but a cross. No;

"Not on the vulgar mass
Called 'work', must sentence pass,
Things done, that took the eye and had
the price:
O'er which, from level stand,
The low world laid its hand,
Found straightway to its mind, could
value in a trice."

No; the utility of a man's life cannot be measured in material things; nor, in fact, can that of his vocation. The latter is merely one mode or embodiment of his life, and partakes of those elusive, but real and essential qualities, of the life.

How, then, shall the Utility of a Vocation be measured?

Speaking generally, it is by the extent of its contribution to the maintenance and evolution of society. Speaking more in particular, it is by the degree in which it ministers rightfully and helpfully to the separate or joint development of man's physical, mental and moral well-being. And, since the Life of Man is organic and indivisible, a vocation which contributes specifically to moral well-being can only be held superior to one that contributes specifically to physical well being in a secondary and somewhat illogical sense; for both are necessary and interdependent. To eat and to drink does not constitute true Life, but yet no higher Life is here possible without the physical as a foundation. Therefore Agriculture, as a vocation designed to provide food and clothing for the body, must be given no inferior position; the more so because through its discipline—as indeed through all our activities—noble qualities of mind and heart are, or may be, developed.

It would seem that no such apology for Agriculture should be needed in the O. A. C. I shall offer no further apology. And yet the facts perhaps warrant one. It is by no means certain that instruction in Scientific Agriculture does everything to reconcile one to the farmer's life, or to fit one for it; at any rate the present position of many of the O. A. C. graduates would indicate that Technical Agricultural Education had not done much yet to retard the lamented exodus from the rural districts. Shall we account for this exodus by supposing that vocations other than that of Agriculture have made their superior claims universally apparent? If not, there are, then, other reasons for the depopulation of our rural districts: strong tendencies at work and movements in progress which our Agricultural Colleges as such are practically powerless to withstand. These tendencies are not wholly evil, even when bitterly deplored. But they are symptomatic of some grave social dangers which he who runs will do well to pause over and consider.

The tendencies to which I have referred may be said to arise out of certain moral defects, always more or less forcible, but working out in many peculiarly modern ways under our present conditions,—in our political, social and economic life.

Much of the trouble arises out of a false notion of wealth, leading to the foolish direction of effort and to false ideals of national prosperity. Says a great thinker: "The assumption which lies at the root of nearly all erroneous reasoning on political economy,—namely, that its object is to accumulate money or exchangeable

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property,—may be shown in a few words to be without foundation. For no economist would admit national economy to be legitimate which proposed to itself only the building of a pyramid of gold. He would declare the gold to be wasted, were it to remain in the monumental form, and would say it ought to be employed. But to what end? Either it must be used only to gain more gold, and build a larger pyramid, or for some purpose other than the gaining of gold. And this purpose, however at first apprehended, will be found to resolve itself finally into the service of man;—that is to say, the extension, defence, or comfort of his life. The golden pyramid may perhaps be providently built, perhaps improvidently; but the wisdom or folly of the accumulation can only be determined by our having first clearly stated the aim of all economy, namely the extension of life.

“If the accumulation of money, or of exchangeable property, were a certain means of extending existence, it would be useless, in discussing economical questions, to fix our attention upon the more distant object—life—instead of the more immediate one—money. But it is not so. Money may sometimes be accumulated at the cost of life, or by limitations of it; that is to say, either by hastening the deaths of men or preventing their births. It is therefore necessary to keep clearly in view the ultimate object of economy; and to determine the expediency of minor operations with reference to that ulterior end.”

It seems to me that such considerations demand particular and special attention at the present time. The

nineteenth century has seen a hitherto unparalleled expansion of man's power over nature. The extension of the natural sciences has been extremely rapid, and their application to our social life even more rapid and startling. Mechanical ingenuity seems to have found no barrier to its efforts, no limit to its achievements. The dream of one day is the commonplace of the next.

In the field of agriculture the same growth is noticeable. Chemistry and Biology are giving agriculturists a new insight into nature, and are granting to the obedient student powers hitherto undreamt of. All this vast extension of power carries with it a vast extension of responsibility; for power may be wisely or foolishly directed. The golden pyramid may be providently or improvidently built. All depends upon the ultimate destination or application of the power. Does it contribute towards man's well-being or towards his detriment, towards his *wealth* or towards his *ilth*? Be assured that the product of man's toil, that which passes current in the market-place, and, maybe, is greedily sought after by the many, is no wealth if it be foolishly or wickedly consumed; in fact *is* wealth only in the degree that it is *wisely* and *rightly* consumed.

Properly conceived, our wealth is the product of two factors, one the material things at our command, and the other the *character* by whose choice those things are consumed. A knife in the hands of a good man will be properly utilized; in the hands of an assassin it is an instrument of destruction. So our national wealth and prosperity cannot be justly and

logically measured by the extent of our material resources, in the multiplication of which the nineteenth century has been so fruitful. It can only exist by virtue of the proper utilization of these resources by a noble-minded and right-thinking people. It will be found, moreover, that the improper use of our power succeeds in weakening, and ultimately obliterating, that power itself.

Keeping these principles in mind it will not be amiss to cast our eyes abroad and view some of the facts.

One of the most noticeable features of our modern life is the great increase in luxurious and elaborate living. Our power has increased faster than our character, and simple tastes are no longer esteemed. Our food is costly and titillating rather than cheap and wholesome. People vie with one another as to the costliness of their attire, their houses, the general paraphernalia of their social life. Street cars and other improved modes of locomotion tempt people to ride, when, for the sake of their health, they should walk. Thus the characteristic appurtenances of modern civilization too often tend to ill-health, effeminacy and slothfulness.

Luxurious modes of life have caused the decline and fall of many peoples; and the danger is no less now than heretofore. To the contemplative mind, viewing the grand vista of the ages, nothing is more impressive than those wrecks of nations and empires which strew, in almost endless profusion, the pathway of mankind. Some of the skeletons have well nigh vanished, others are buried under the debris of subsequent decaying hosts,

while still others struggle fitfully onward. Ancient Egypt had attained a pitch of civilization and development in the arts, industries, and refinements of life that we are only beginning to conceive, and which in many respects was superior to our own. Yet she vanished and left nothing to mankind but a few broken remnants of past glories, a solemn and sad lesson to the student of history. Some peoples, on the other hand, travel manfully, having imbibed the life-giving spirit, and having shunned the errors of certain predecessors. The proper genius of the Hebrews and Greeks has proven itself capable of withstanding the buffets of external changes, and survives victorious, permeating to-day the best and most progressive in our modern life.

"History is Philosophy teaching by experience." May the lessons be well learnt! He who runs will do well to read the lessons of history and to work for the permanent and stable, not for the temporary and ephemeral, nations, likewise, and agriculturists, each contributing its or his quota to that which passeth not away.

Connected with the above luxury, largely as cause, is the unequal distribution of material good things. If there be no other argument against this sort of inequality adducible, this alone would be sufficient to condemn it, namely, that it tends to increase the *misuse* of the money power, both by the rich and the poor. When ostentatious Vanity flaunts itself abroad, demanding society's obeisance, while Vice and Poverty stalk sullenly through the dark places of

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Again, view the vast unprofitable consumption of potential wealth in maintaining military armaments, and in waging war! Look at the immense toil spent in making food and drink that satisfieth not, but rather abases and enfeebles! Think you not that we all pay for this; somehow, somewhere? It is plausibly asserted to the contrary, that we gain by another's loss; that war raises prices, 'makes trade brisk,' etc., etc., *ad infinitum*. Foolish people think so, but the Devil never palmed off a greater and more plausible lie on struggling humanity. It has been well said: "The world looks as if they could cozen it out of some ways and means of life. But they cannot cozen IT; they can only cozen their neighbors. The world is not to be cheated of a grain; not so much as a breath of its air can be drawn surreptitiously. For every piece of wise work done, so much life is granted; for every piece of foolish work, nothing; for every piece of wicked work so much death is allotted. This is as sure as the courses of day and night. But when the means of life are once produced, men, by their various struggles and industries of accumulation or exchange, may variously gather, waste, restrain, or distribute them; necessitating, in proportion to the waste or restraint, accurately, so much more death. The rate and range of additional death are measured by the rate and range of waste; and are inevitable;—the only question (determined mostly by fraud in peace, and force in war) is, Who is to die, and how?"

The reader may possibly judge these considerations far-fetched; but it is in reality not so. Wherein is the advantage in being able to make two blades of grass grow where one grew before if this grass is to be dried, transported with infinite difficulty to a remote part of the earth, and there fed to horses shot down by means of other scientific triumphs, lyddite and gunpowder? Why spend enormous time and effort in supplying pampered and enervated society with fruits and meats out of season? The saloon-keeper satisfies the demands of the drunkard and gets little glory thereby. So likewise we, if we satisfy more or less questionable demands of British or other markets. Still less, in such cases, will ultimate profit ensue to either party. The worker must produce bread for all, and he would have a greater share thereof if his time were not so largely consumed in ministering, remotely or directly, to the depraved, foolish or questionable tastes of the idler or semi-idler. Thus, for a given amount of intelligent labor, the remuneration of our farmers is lessened, and, with an eye solely to No. 1, the thoughtless and selfish countryman rushes into the fast increasing band of those who are 'living by their wits' at 'genteel' employments, imagining that they are *making* a living, whereas they are chiefly engaged in appropriating portions of others' livings.

Other things, also, make the lot of the average farmer a hard one as far as remuneration is concerned. He is made the victim of many greedy and soulless corporations, who, protected by various trade restrictions and unfair laws, and incited by the gambling

fever (under plausible guise), appropriate a large part of his earnings, and with the power thus obtained, set on their minions to further fleece him.

The modern advertising mania must be held accountable also. Were half the effort now spent in trying to *persuade* people as to the superiority of certain articles, devoted genuinely to improve their quality, all but foolish people would rejoice, and all, both wise and foolish, would benefit by the real superiority obtained.

These are some few of the many like ways—however complicated and obscured their actual working out may be—in which the farmer's remuneration is inevitably curtailed. Such curtailment renders the vocation of Agriculture somewhat arduous, and hence we have rural depopulation. It is true that by improved methods the producing power of the farmer can be greatly increased, and, if one half of his earnings is normally swallowed up by social parasites, he may still thus maintain his position. When caught between the upper and nether millstones he might as well 'grin and bear it'. If he can but slightly affect the *price* at which his commodities sell, he can, at least, considerably affect the *cost* of production. So far, so good. Yet one should not be blind to the fact that the general moral character and tastes of those with whom he has direct or indirect dealings (and the circle is by no means small) will determine the adequacy

or inadequacy of the material reward of his toil. There is more than mere sentiment in the injunction to seek first Righteousness, and that then all other things will be added.

To remedy such evil conditions as I have alluded to, instruction in Scientific Agriculture is, in itself, powerless. It may partly offset or neutralize the evil results of such conditions in two ways: First by increasing the agriculturist's power over nature, and secondly by developing in him a love and appreciation of his occupation, so that a strong bond of attachment may exist between him and his work. This much it may do, and, in a measure, is doing. It is, in its way, no small thing, and should be rightly valued. Nevertheless the wise man will look above and beyond all this, and will realize that, "as the great world spins forever down the ringing grooves of change," it is relatively a small thing. Before its blessings can fall freely on the heads of obedient humanity, martyrs of the field, market and council will have to lay down their lives,—eloquent witnesses to the fact that there is something better than prostituting science to the satisfaction of barbarous instincts and vain ambitions. Then shall arise from the graves of the victims a generation who shall rightly comprehend Utility, and shall firmly believe that "The Dignity of Calling is its Utility," and the utility of a calling its worth and dignity.

W. C. Good.

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NATURE STUDY AT THE O. A. C.

In an article contributed for the October, 1901, number of the *O. A. C. Review*, I attempted to show not only the importance of Nature Study in our Public Schools, but also the best means of preparing teachers for giving instruction along Nature Study lines. In the sixteen months that have elapsed great progress has been made. A summer school in Nature

and a cry has gone forth that we must get *back to Nature*, and study her ways, if we are ever to realize the best and highest ideals of education. Prof. Lloyd Morgan says:—"The value of Nature Study lies not chiefly in imparting a particular kind of information; it consists not so much in what is taught (although this is valuable) as in fostering an at-



View of Main Buildings, Showing Flower Beds.

Study was held last summer at the Toronto Normal School; two textbooks on Nature Study were published in Toronto; and the Department of Agriculture at Toronto published a short time ago a Nature Study Bulletin, prepared by the O. A. C. Staff. It is apparent that progressive educators are alive to the importance of this new development,

an attitude of mind, an attitude of observational alertness; of inquiry into the meaning of familiar facts in garden, field, and hedgerow; of susceptibility to the subtle influences of nature in her winter sleep, her vernal awakening, her summer maturity and all the cycle of her changing moods."

In this age of stern competitive struggle it is highly important that the training of our boys and girls should be *symmetrical, educative and practical*. We have been in the habit of training the mind only and calling that education, but the new educational idea is to train harmoniously the powers of both body and mind. It believes in bringing the pupil into close relationship with Nature, for new conceptions originate only through the senses.

Nature study may be treated from two view-points,—first, as a purely educative factor, by which we mean that it is a method of study rather than a subject of study, or in other words, “an influence which permeates the whole range of school studies, and affects the intelligence and point of view of teachers and pupils.” Second, Nature Study is to be taken up for its economic usefulness, assuming that an intimate knowledge of Nature will make men “better able to cope with their living environment,” and hence make them better citizens.

This year for the first time a two-months course in Nature Study will be taken by the students of the Third Year. This course will begin about the 20th of April. The object of this course is to bring the students into direct contact with Nature, and to observe her ways. For some time it has been felt that the studies of the regular session dealt too much with indoor laboratory collections and with books, and too little with out-of-door investigations. It has also been felt that the student should acquire the habit of observing and thinking for himself and at his

best, without books or help, in the presence of the facts and in the open air. Simple nature objects will then acquire a meaning. This course is to be “education by observation as opposed to information by memorized definition.”

The instructors will give no set lectures. They will simply act as guides, and suggest lines of investigation. The topics assigned to each student for investigation will relate as far as possible to matters of economic importance to the agriculturist, for it is believed that the investigations which follow, will carry out the dual purpose of Nature Study which I have already indicated. The students will be expected to report on the progress they are making in their investigations, and to give a summary of their work before the class.

Subjects such as the following may be assigned for study:

The development of the fruit of the apple; the development of the apple scab; a study of fruit spurs; identification of the shrubs on the lawn by means of their buds; the bark of forest trees; early spring plants; identification of the common grasses by their leaves; the habits of the grasses; the flowering of forest trees; wintering forms of insects; the development of the bud moth and case-bearers; life-histories of plant lice and scale insects; the codling moth; canker worms; an insect calendar; experiments with wheat rust and oat smuts; studies of some fungus diseases; habits and studies of the common birds; bird charts; germination of seeds; studies of soils; soils of the College farm; properties of different soils; operation of

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geological agencies; care of school gardens; life-history of the frog; propagation of plants; recognition of timbers; rate of plant growth; plant colonies; flora of ponds and bogs; aquatic insects; parasites; beneficial insects; problems on forestry; a comparison of the conifers; a comparison of the fruits of our elms, our oaks, and our pines; willows; life history of the plum rot; the habits of weeds; the leaves of the clovers; the roots of the clovers; a comparison of aerial and underground roots; insects and fertilization; some insectivorous plants; the variability of leaves; inflorescence of the corn plant; tendrils; root pressure; transpiration of leaves; studies of modified stems; protection of the growing point of the root; the search for water by roots; mycorrhizae; how seedlings break through the ground; the genus *Brassica*; nectaries of flowers; fertilization of legumes; influence of weather on insects and fungous diseases; a study of the heavens at night; studies in the

struggle of plants for the occupation of the land; habits of earthworms; etc., etc.

Collections of plants and insects, and drawings and photographs will be required in connection with the reports.

The Nature Study Class will be composed not only of our Third Year students, about twenty-four in number, but also of eleven teachers-in-training for consolidated schools. The latter will be a valuable acquisition to the class. They have been in Prof. Robertson's care for the last five months, and have taken special courses in Nature Study and Nature Study methods at Chicago and Cornell. While with us they will devote their attention mainly to practical work in the making and care of school gardens and experimental plots, and to practical field observations on birds, insects, and fungous diseases.

W. LOCHHEAD.

THE FARMER'S FEATHERED FRIENDS.

Few of those engaged in agriculture are aware of the great aid given them in their occupation by those persecuted, much-maligned bipeds, the birds.

The reason for this lack of appreciation is that, while any harm done by the feathered community is easily apparent, the benefits conferred, though very real and of enormous importance, are only made manifest by close observation. It has been stated that if all the birds were destroyed the human race would become extinct in

a few years, as the insects would have increased to such an extent, in spite of all the sprays and poisons which man could use, as to consume all the crops. This is probably a very extreme statement, but it serves to show the importance of birds in the economy of nature as viewed by an ardent student of birds.

The chief reason for the enormous quantity of insects destroyed is that the young of nearly all our common species, even those which are gregarious when adult, are fed on an al-

most exclusively insect diet. This is necessary, as the stomachs of the nestlings are not muscular enough to digest seeds, and other vegetable substances do not possess a high enough nutritive ratio.

As a nestling, for the first week after hatching, and until it leaves the nest, requires more than its own weight in food per day, and as two or three broods of from three to five young are raised every season by each pair of our birds, we can see what a check this must exercise on the increase of insect life. The quantity of food required by nestlings would appear wonderful were it not for the fact that for the first week they make a daily gain in weight of about fifty per cent., and from twenty to thirty per cent. per day for the rest of the time they are in the nest. To supply this prodigious amount of food keeps the parents busy from four o'clock in the morning until seven o'clock at night, serving on an average two hundred meals per day to the nestlings.

As the nesting season occurs in the early summer, just when the insects are doing most injury to the young crops, it is easily seen what valuable allies nestling birds are to the farmer. S. D. Judd, the well-known economic ornithologist, calculates that in Nebraska during the years 1874-5-6-7, the nestlings of one species alone—the Long Billed Marsh Wren—saved the farmers of that district \$1,743.97 a day per square mile by the destruction of locusts, which would otherwise have consumed crops to that value.

One of the hardest insects which the market gardener has to combat is the cucumber beetle, and this has been

found to be one of the favourite foods of the Purple Martin; the Kingbird, besides destroying the many flies injurious to stock, has a taste for asparagus beetles, while the Rose-breasted Grosbeak fancies potato-beetles.

House Wrens, Cuckoos, Warblers and Swallows are exclusively insectivorous, and should, consequently, be encouraged to take up their abode in the neighborhood of our dwellings.

Of the many species of Warblers, the great majority pass through this Province in the spring on the way to their northern nesting-grounds, only a few species—the Black and White, Black-throated Green, Chestnut-sided, Canadian, Yellow, and a few individuals of some of the other species breeding with us; but those that pass through pay their way as they go, by giving our trees a thorough "spring-clean" in the shape of destroying countless millions of caterpillars, plant-lice, and other enemies of the foliage.

In the winter our resident birds, Chickadees, Nuthatches, Creepers, etc., examine every tree for eggs of insects lying in the crevices of the bark, and one of the best ways to keep an orchard free from insect pests is to hang pieces of suet, fat, or bones with some meat left on them on the trees to attract these birds and induce them to remain in the orchard through the winter, and nest there in the spring.

If it were not for the Woodpeckers with their special adaptation of bill, tongue, feet and tail-feathers, both our orchard and forest trees would be badly destroyed by borers; yet, instead of protecting these birds, many

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people declare they are injuring their trees, and shoot them whenever they appear in the orchards. Our commonest Woodpecker, the Downy, together with the Hairy, Red-headed, and Flicker are most energetic friends of the forest; and the Yellow Bellied Sapsucker, though it does drink sap and eat the cambium layer of trees to some extent, rarely, if ever, does any injury.

The work which birds, particularly the much-abused Sparrows, do in the destruction of weed-seeds must not be overlooked, as they consume a large percentage of the seeds produced, and rarely, with the exception of the House Sparrow, take any grain, except that which they may pick up from the ground after harvest. Sparrows have been accused of disseminating weeds, but careful experiments have shown that the seeds which passed whole through the birds were in an insignificant proportion.

Of all birds, the most persecuted are the Hawks and Owls, yet these birds render most valuable service to the horticulturist and farmer by keeping in check rabbits, rats, mice and other rodents which do harm in the orchard by the girdling of trees, and injure the meadow by eating the roots of the grass.

Among all our common species of Hawks only two—the Cooper's and the Sharp-Shinned—are injurious, and no hawk should be shot until positively identified as one of these, or caught visiting the henhouse. Our commonest hawk—the Red Shouldered—rarely touches poultry; a pair of these hawks nested for several successive years near a large poultry-

farm and never took a chicken; yet this is the so-called "hen-hawk" which is shot at every opportunity.

Among the Owls, all, with the possible exception of the Great Horned Owl, are of the greatest service to the farmer, as they destroy the nocturnal animals which would otherwise commit depredations on his property while he slept. The Great Horned Owl does no injury where chickens are shut up at night, as they should be. The injury done to young plantations in districts where birds of prey have been nearly exterminated is very serious, as often many trees are killed by girdling. Two plantations were under observation; one near buildings, where birds of prey were afraid to venture, the other remote from dwellings and near a bush; the former was nearly ruined by the girdling of the trees, the latter was scarcely touched.

With these facts in view let everyone interested in agriculture do his share in enforcing the laws we have for the protection of our feathered friends, and aid in securing for them still further legislative protection.

A. B. K.

Carefully consider what special advantages your farm possesses, and take advantage of them.

This is the day of specialties. When you have decided what you can do best, stick to it, and make up your mind to go to the front, recollecting—to paraphrase the words of Pope—For kinds of farming let fools contest, What's best administered is best.

Agricultural Department.

EDITED BY A. P. KETCHEN.

Building the New Barn.

In our modern systems of intensive agriculture, in which all, or nearly all, of the produce of the land is fed to some class of live stock, and marketed in the form of live stock products, the stock barn is a very important part of the farmer's equipment. It is not enough that a man provide himself with first-class stock of the most approved type and breeding; nor is it enough that he feed his animals liberally and skilfully; if the most profitable results are to be obtained, the stock must be housed in sanitary buildings, so arranged as to permit of their care at a minimum cost of time and labor.

Under ordinary circumstances, a farmer builds but once in a life-time. It is, therefore, important that every smallest detail of the proposed new barn be carefully thought out before commencing operations, in order to avoid mistakes, which are, often, not easily remedied after the building is erected. Neglect to do this may result in an error that will be a constant source of regret for years.

Conditions differ so much in different localities, and even on different farms in the same locality, that to attempt to outline a model barn that could be adapted to the needs of all, would be absurd. There are, however, certain main principles that are equally applicable under all conditions; and it is to a discussion of some of these underlying principles

that I propose to address myself in this essay.

One of the most important of these principles is efficiency, or adaptability. The barn must be adapted to the purpose for which it is being built. That is to say, it must afford ample accommodation, under the most sanitary conditions, for all the stock that are likely to be kept on the farm; it must be adapted to the particular kind of stock to be kept;—if on a dairy farm, it must be suited to the requirements of dairy stock, if the farm be devoted to mixed farming, the barn must be modified in certain particulars to suit the requirements of mixed husbandry—and it must afford storage for all the produce of the particular farm on which it is to be built. It is a foolish mistake to build, on a two hundred acre farm, a barn suited only to the requirements of a hundred acres; it is equally absurd to build, on a hundred acre farm, a barn large enough for two hundred acres.

Another important principle, to be kept in mind in building the new barn, is economy: economy in first cost of erection, economy in cost of maintenance afterwards, and economy in time and labor, in the storing of hay and grain, and in caring for the stock. By the term economy, I do not necessarily mean a saving of outlay: economy may, and, in fact, often does, mean judicious expenditure. That man is most economical who, while avoiding all unprofitable expense, seizes every oppor-

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tunity to invest money or labor where it is likely to yield him good dividends, whether those dividends be in the form of cash or in some other source of satisfaction. While, therefore, I do not endorse the practice of building fancy structures beyond the means of the owners, I do say, that, when a few extra dollars, expended here and there on the new barn, will add daily to the comfort and welfare of the stock, and be a lasting source of pleasure and satisfaction to those in charge of them, it is good economy to make the investment.

Great care should be taken in the selection of a site for the barn. It must, above all things else, be dry, preferably the crown of some slight knoll, or elevation. Until quite recently, it has been the prevailing practice to select the face of a side-hill, and to excavate so that the stable doors would open on a level with the surface, while the back of the stable would be from two to four feet below the level of the ground. This has been found to be a mistake, and, especially in the clay districts, has been abandoned. If the subsoil be very dry, porous sand, or gravel, the objection to this practice is not so great; but on a clay soil it is next to impossible to secure a perfectly dry stable and yard on the face of a side-hill, and especially if excavated in the manner that I have indicated. Not only have we to contend with the surface water,— which perhaps would be easily diverted—but there is a constant soakage from the face of a clay slope of this kind, that tends to keep the stable damp, and the yards soft and muddy during a large part of the fall and spring months. Good drainage will, it is

true, prevent water from actually percolating through the walls into the stable, but even with the best of drainage the walls will be damp and cold, especially in the spring, when the ground is saturated with water. The floor, too, has been brought closer to the level of the soil water, and will be colder than if separated, by two or three feet of relatively dry earth, from the water table. To build on the level, or on the crown of some slight elevation, entails more labor in building the approach, but, apart altogether from better sanitary conditions, it is well worth the trouble. The barn looks better, adding considerably to the general appearance of the homestead; the foundation is apt to be better, because of more perfect drainage; and the surroundings are more likely to be clean and dry, an advantage not easily over-estimated.

The barn should be far enough from the house to reduce the danger from fire to a minimum, to avoid contamination of the well by soakage, and to preclude any annoyance in the house from stable or barnyard odors. On the other hand the distance should not be so great as to become an inconvenience. The various members of the family make a good many trips between the house and the barn in the course of a year; to shorten the distance, therefore, by even a few yards, effects a saving of time and energy that is worth considering.

Since our prevailing winds are from the north and west, it is desirable to have the barn facing the south or the east. This locates the yard, not only on the sunny side, but also on the sheltered side of the barn; it also minimizes the probability of cold winds blowing directly in at the doors when open, as they generally are during a part, at least, of every day.

TO BE CONTINUED.

A. P. K.

Live Stock Department.

EDITED BY PROF. M. CUMMING.

Experimental Stock-Feeding at the O. A. C.

It is some little time since anything has appeared in the columns of THE REVIEW in regard to the experimental feeding work, which is being conducted at the College, and so, thinking the matter may be of interest, especially to our ex-students, I will briefly outline the work of the present year. Before doing so, however, a word in regard to this class of investigation will be necessary.

There are many variable and almost indeterminable factors entering into livestock experimentation which place it upon a very different basis from almost any other class of experimental research. These are the individuality of animals, which shows itself in the amount of food consumed and the ability to turn that food into flesh, the varying weather conditions which affect animals to a considerable extent, and, finally, differences in the various fodders from year to year.

In the light of these facts, no live stock experiment can be considered of very great value unless it is repeated a number of times, and not till this has been done can any definite conclusions be drawn. Too often, however, live stock experimenters, anxious to magnify their work in the public eye, have published very erroneous results in regard to the value of various fodders and methods of feeding, simply because they have failed to recognize the truth of the above statement. Whatever other merit can be

claimed for the College Experiment Station, we must confess that the greatest care has been exercised, by the frequent repetition of experiments, to secure certainty of results. And while, perhaps, as an outcome of this policy, the amount of work done may seem relatively small, still, in our humble opinion, the care exercised in regard to results has so greatly enhanced their value as to more than atone for that.

As an instance of this we might cite the fact that, in order to ascertain the causes of soft and firm bacon, at least five experiments have been conducted in heavy and light and no root rations. So also experiments conducted, in order to demonstrate the relative feeding value of ensilage and roots, have been duplicated and have only been dropped this year because of the scarcity and inferior quality of ensilage. But it is not our purpose to outline all the work of the experiment station. That the reader can find out for himself by referring to the college reports and station bulletins. We wish to tell just what is being done now.

There is in the experimental stables, at present, a bunch of 16 steers, 8 of which are being fed as long keep steers, with a view of putting them on the market sometime in May, and the remaining 8 of which are being fed a much heavier ration with a view to putting them on the market in March. The aim of the experiment is to determine the relative economy of these

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common practices in feeding steers. A similar trial was made last year, the results of which indicated a greater economy of food in favor of the long keep steers, but perhaps not sufficient to make up for the extra labor and the longer time in getting returns. In addition to this part of the experiment, half of the steers in each group are being fed long hay and whole roots, while the other half are receiving cut hay and pulped roots, in order to determine what is the economy, if any, in cutting good hay and roots for cattle. Finally, 8 steers selected from each group are being fed blood meal, a bye-product of the packing houses, which was sent here for experimental purposes by Swift and Co., of Chicago. This bids fair, by the by, to make a very acceptable and valuable addition to our present list of concentrated feeds, although we are having a little trouble in getting some of the steers to relish it.

There are also in the experimental stables 9 of the range steers, which were brought from the West by the Dominion Live Stock Commissioner, with a view to determining the profit in feeding this class of cattle in Ontario. So far they are proving themselves very hearty feeders, and, although not so docile as one would like, are adapting themselves wonderfully well to their more domestic conditions. They are as yet quite thin, and will not be ready for market before June. Personally, we think these steers are just a little too young, and are devoting too much of our relatively expensive feeds to making growth, which, we would judge, could have been more cheaply made on the western plains.

These steers have monopolized the space generally used for sheep experiments, and so this part of the experimental work has been set aside for a year.

Two lots of hogs have been shipped to the Davies Co. packing house during this season and at present there is but one lot left. The Davies Co., it may be incidentally stated, have been most obliging in their efforts to make the results of the College experiments as complete as possible, and, at considerable inconvenience, have given full reports as to the quality of bacon produced by the different lots of hogs sent to them. In this way much has been determined, not only as to the relative economy of the various methods of feeding, but also as to the relative quality of the bacon produced. The two lots of hogs above referred to were divided into several groups and very satisfactory data were obtained as to the value of feeding hogs on pasture, feeding them green feed in their pens, the effect of heavy root feeding, and of skim milk feeding followed up by roots. While we may mention in passing that all of the above experiments indicate the very great value of green feed, (rape, etc.) roots and skim milk fed in conjunction with meal for the production of a good quality of bacon, and that in general it was proved to be more economical, if labor were available, to cut the green fodder and feed it in the pens, rather than to allow the pigs pasture on it, yet we must refer the reader to the College report, shortly to be issued, for a full account of this work. The lot of hogs at present here are divided into two groups, one of which is receiving a pure meal ration, and

the other of which is receiving, in conjunction with some meal, all the roots they will eat. If the results of this experiment are identical with those of similar experiments conducted in the past to determine the effect of roots on the quality of bacon, it will be felt that they may be relied upon as certain, and the experiments along this line will be discontinued.

In conclusion, we may say that Prof. Day, under whose supervision this work is carried on, has proved himself an exceedingly well qualified

man and deserves much credit especially for the thoroughness of his research. However, we think that the importance of the work really calls for a larger equipment than is afforded by the somewhat limited buildings, and we hope, ere long, to see the work considerably extended, in order that a greater amount of investigation into the most eminently practical and economic considerations of feeding farm animals may be rendered possible.

M. C.———G.

Horticultural Department.

EDITED BY A. B. CUTTING.

The Marketing of Tender Fruits.

In last month's issue we had an article on "Packing Apples for Export." Thinking another article of much the same nature would be of interest, I decided to give a brief review of the most common methods practiced in picking, packing and marketing some of our tender Canadian fruits.

By tender fruits, I mean such fruits as peaches, plums, grapes, cherries and the small bush fruits, which will not permit of long storage or severe handling. Apples and most varieties of pears are regarded as hardy fruits, for the reason that they will stand long storage and considerable handling without apparent injury.

As a general rule, tender fruits, and in fact all fruits, should be picked when they have reached their full

color, but are still firm. Soft, juicy, over ripe fruits are very undesirable for shipment, and can only be disposed of on the local markets. The grower must study this question and decide for himself when the different classes of fruit are in the best condition to be placed on certain markets. This ability of determining when the fruit is in the best condition for picking is obtained only by close observation and constant practice.

Great care should be exercised to prevent the fruit from being injured during the picking and packing processes. Fruit which is injured in this way soon becomes decayed, and, if allowed to get into the shipping packages, very often injures the sale-ability of otherwise first-class stock.

Regarding the style of package to be used, no hard and fast rules can be laid down. The kind and class of fruit and the market to which the

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grower wishes to cater, should determine very largely the style of package he should use. For the wholesale trade the grower should endeavor, if possible, to adopt a uniform package. Nothing appeals more to the wholesaler than neatness and uniformity in packing.

For strawberries, raspberries and blackberries I prefer the standard twenty-four box crate. This is a very desirable form of package, for the reason that it carries the fruit well in transportation, and is very convenient in the retail trade. For cherries, plums and peaches, the standard eleven-quart basket of the Climax design is being used very extensively, and is proving very satisfactory. It is very compact and neat, shows the fruit off to the best advantage and is of a convenient size for private use. The basket most commonly used for grapes is of the same design as the peach basket, but is supposed to hold only nine pounds, or about eight quarts of fruit. A smaller basket, holding five pounds, is used to a limited extent, but only for fancy stock.

All fruit should be carefully selected and graded before it is placed upon the market. More harm has been done to the fruit trade through careless and fraudulent grading than in any other way. Unscrupulous growers have flooded the markets with inferior stock to such a degree that buyers will not pay good prices for fear of being deceived. The only way to regain the confidence of the purchasing public is by requiring all growers to strictly observe this question of grading.

Improved methods of transportation are aiding the grower to put his goods on the market in much better condition than in former years. Goods packed carefully in refrigerator cars may travel for two days in warm weather and come out in splendid condition.

In the larger fruit growing sections the greater part of the fruit is shipped in car load lots, refrigerator cars being used. Smaller lots are sometimes shipped by express, but this usually proves rather expensive.

A large percentage of the fruit is sold by commission merchants in the various cities. These men retail it to the private dealers, who in turn sell to the consumers. Some growers sell on order, and others sell direct to buyers in the orchard. The last two methods usually give the most satisfactory results where large quantities of fruit are being sold.

F. W. BRODRICK.

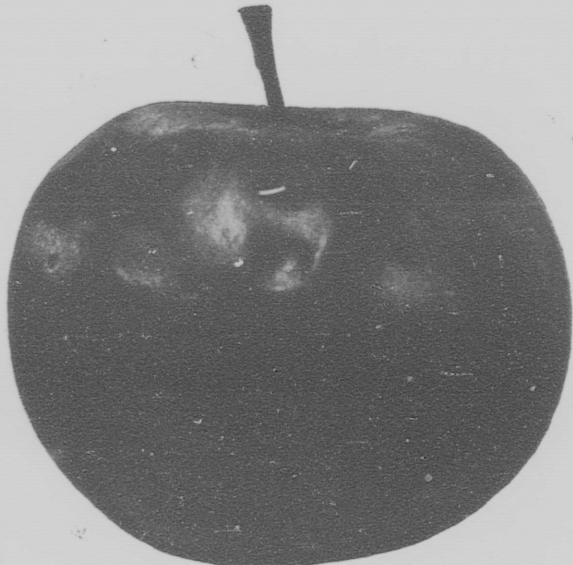
Eat more fruit and less meat and let the packers and doctors look out for themselves. The doctor has little to do with fruit eaters. We did not say no meat; but eat less meat.

The bushel box is becoming more popular each year as a proper package in which to pack apples as well as other kinds of fruit. It is everywhere popular in markets, and when growers learn to know the advantage in making sales, they will understand how to select, grade, and pack fruit in boxes, instead of selling in bulk or in barrels where the top layers are larger than the apples in the middle of the barrels.

The Influence of Climate Upon Fruit.

We are all familiar with the general fact that certain fruits are grown in certain regions, that we have tropical, sub-tropical, and temperate fruits, and even that the peach belt and the apple belt do not coincide. Probably most of us know, some perhaps by rather disappointing personal experience, that certain varieties of fruits are not so "hardy" as others. But have we ever considered at all carefully how a difference in climate may influence the form, quality, and other characteristics of any particular variety of a fruit?

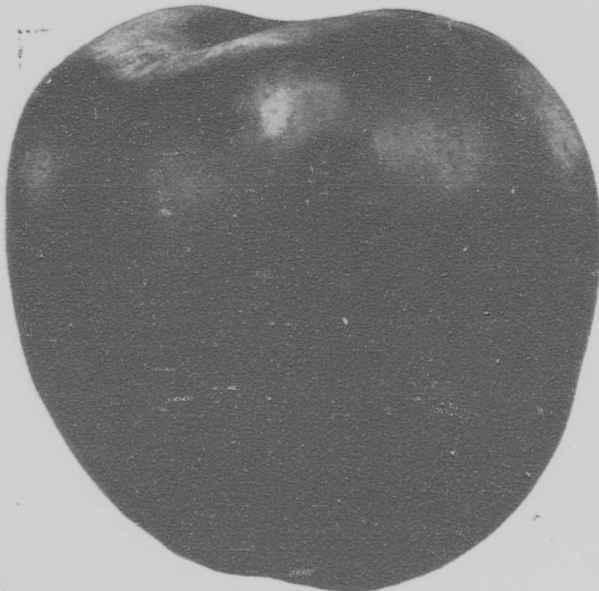
I imagine that very few of us have done so and perhaps fewer still have had an opportunity to examine personally samples of the same variety of fruit from different sections and



Massachusetts "King."

note the peculiarities and differences.

The writer had such an opportunity, which was afforded him by receiving a barrel of specimen apples of different varieties from Prof. F. A. Waugh, of the Massachusetts Agricultural College, at Amherst, Mass. Some of them were so changed as really to be scarcely recognizable by their general characteristics. When I came to study them more carefully, to note dots and other skin characteristics, there were a few which suggested our Nova Scotia apples of the same sort, but even then it was only a guess and I needed Prof. Waugh's label to verify my suspicion.



Nova Scotia "King."

The most conspicuous changes noted are that our Nova Scotia apples are longer, more inclined to be ribbed, and of a deeper, darker red.

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In the King of Tompkins, for example, the Massachusetts apple is markedly oblate, very smooth and regular in outline, with the basin or blossom and very slightly corrugated, if at all. The Nova Scotia Kings, on the other hand, while occasionally flattened, are typically rounding or approaching oblong in shape, very distinctly ribbed, and with the basin deeper and much more corrugated. These differences are shown fairly well in the accompanying cuts.

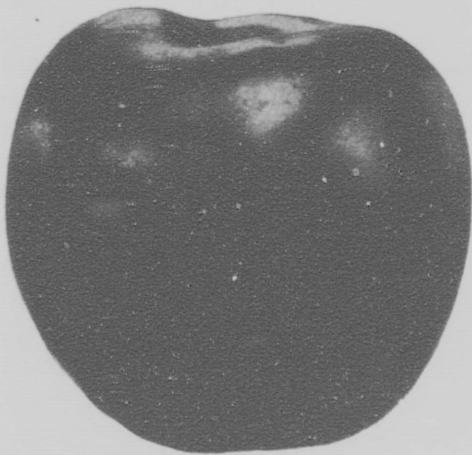
Baldwins show the same differences to even a greater extent. The Massachusetts apple is a very smooth fruit, rather oblate, with neither basin nor cavity corrugated to any extent; while our Nova Scotia Baldwins are proverbially rough in outline, are conic and approaching oblong in shape, and are always corrugated at the blossom end, and with the five points which mark the five ovaries always prominent. In color, too, there is a marked difference. While the Massachusetts fruit is a handsome scarlet, the Nova Scotia Baldwin is much darker, more of a



Massachusetts "Baldwin."

crimson, or even brownish or bronze.

In talking with my good friend Mr. R. W. Starr, who knows more about apples than any other half dozen men in Nova Scotia, I find that he had much interesting correspondence with the late Charles Downing (to whom he often sent fruit), on this very subject. Mr. Downing repeatedly expressed surprise at the much deeper color of our Nova Scotia apples, and the tendency of such sorts as Rhode Island Greening to have a flush on the cheek as grown here, while in his district they are practically green. He more than once named an apple incorrectly, owing to its higher color and more irregular shape. Mr. Downing considered the apples from Nova Scotia as of the highest flavor, and said that from only one other section, the Cumberland Mountains of Tennessee, did he find them equal in quality. He attributed this difference largely to our cooler, more northern climate (the higher altitude of the Cumberland Mountains giving practically the same effect). President Schurman, of Cornell University, has



Nova Scotia "Baldwin."

expressed the same opinion, saying that the Nova Scotia King of Tompkins was much superior in quality to that of New York.

If this be true as a general principle, and there is certainly good authority for believing it, should it not encourage Canadian fruit-growers to press forward hopefully, for if our northern climate gives us high quality of fruit and more color, we ought certainly to be able to pack it with sufficient honesty and attractiveness to make it stand at the head of the procession and defy competition.

F. C. SEARS.

Principal, School of Horticulture,
Wolfville, N. S.

The Stringfellow System of Root Pruning.

A few weeks ago there appeared in the *Practical Fruit Grower* a short article by Prof. H. E. Van Deman, on the Stringfellow system, which brought forth in the *Pacific Fruit World* a rather warm defense from the pen of the originator of the system himself. The remarks of Prof. Van Deman we quote in full: "When all the conditions of soil, temperature, climate and plant food are favorable, it is better to cut back both top and root before planting, especially if the trees or plants are small. This is the basis of the Stringfellow method of planting as I understand it. I have tested this plan repeatedly with trees as well as with tender plants during the last forty years. It works very well under proper conditions, but not unless they are just right. In my opinion, that is why it is more appli-

cable in the Southern States, where the climate is milder than in the north, where it is more severe and changeable and the soil more compact."

Referring to this, Mr. H. M. Stringfellow said that the Professor was one of the first to condemn him many years ago, and did not then profess to know anything about the system from experience. "The fact is it applies to trees of all ages, everywhere, and the larger the tree the more necessary it is to root prune." To answer just such limitations of the value of root pruning to Southern climates, as pointed out by Professor Van Deman, he says he donated his book, the "New Horticulture," copyright, plates and all and 1,000 copies delivered free in New York, to the editor of the *Rural New Yorker*, on condition that he conduct an experiment with trees pruned as required in the Stringfellow system. The offer was accepted, and an orchard of trees, with roots cut off to mere stubs an inch or two long and tops cut back to stumps, was set out on poor, rocky, unbroken ground. The trees were set in holes made with a crowbar. The orchard was mulched, but not cultivated, except once or twice a year with a mowing machine. The results, Mr. Stringfellow says, were so favorable and the trees rooted so deeply that the editor of the *R. N. Y.* has recently enlarged his planting and announced himself perfectly satisfied.

In conjunction with the above defense of the system, a letter of endorsement by Prof. Munson, of Texas, was also published. He says that the system, wherever tried, has given

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excellent results. "It vastly lessens the expense of digging and filling holes, and gives better, longer lived orchards and vineyards than to plant full rooted trees and vines." He takes exception, however, to the practice of leaving the surface soil undisturbed and planting in sod, and claims that it is safest to thoroughly prepare the soil by deep plowing and subsoiling, planting the stub-pruned trees with a crowbar, and then practicing clean, shallow cultivation to get the best results.

The tenor of this controversy forces us to realize that even the gods of horticulture may disagree. In the face of such pertinent expressions of opinion, it probably would be presumptuous for us to express our ideas on the subject. Let us, therefore, be neutral for the present, and calmly watch the development of the discussion.

Before concluding, let us note Prof. Bailey's opinion of the system, as stated in "The Pruning Book": "The gist of the whole matter, so far as the theory is concerned, is that individual instances and the results of certain experiments have been enlarged into an hypothesis, which has been applied to all plants. The stub-root system is really not a system at all. It is not founded on a body of principles. It is a matter of practice, which will sometimes be useful and sometimes not. Its success depends on local and incidental conditions."

A. B. C.

Forcing Hard Wood Plants With Ether.

Some time ago Professor Johanson, of Denmark, published the results of researches and experiments in the use of ether in forcing lilacs out of season. The subject has since been taken up around Paris and experimented with quite largely. It has been found that any of the hard wood shrubs may be forced very quickly by first etherizing them. The process in brief is to take up the plant after it has become thoroughly dormant, allow the earth to dry out somewhat and then place it in an air-tight box in which is a reservoir to hold the ether. After the box is closed the ether is poured in through an opening which is at once carefully closed to prevent the escape of the vapor.

The plants are exposed to etherization about fifty hours, then they are placed in the hothouse, watered, and treated in the usual way. About 400 grams ether are used per cubic metre of air space. Plants have been brought to flower with this process in 12 days of forcing, whereas similar plants not treated had barely begun to grow in that time. Care must be taken that the plants are perfectly dry and dormant when they are put in. For the forcing of lilacs, azaleas, spireas, hydrangeas, dentzia, and other shrubs of like character, this process holds out considerable promise. It may be possible also to use it in forcing fruit trees in pots.

The man who eats no fruit is the man who has said in his heart, "It does not pay to set out trees; one has to wait too long for fruitage."

The O. A. C. Review.

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FEBRUARY, 1903.

Editorial.

The Union meeting of our Literary Society, held on January 31st ultimo, was a brilliant success, a programme of the highest order being produced. The oratory and argumentation of the debaters was especially excellent, and gave us a striking proof of the efficiency of our Literary Society as it stands at present. The division of the main society has made it possible for every person to get a chance to improve himself in public speaking. He who refuses to take this chance must have little ambition. For it seems to us that there can be no better ambition for any youth than that of wishing to be able to command the attention of audiences, and in a true sense to rule men—through their brain and heart and not through their pocket-book. We are safe in encouraging such ambition, because on account of the higher education of the masses in this age, we have little fear of a rule of demagogues; and if partyism were laid aside, eloquence would be wasted breath unless permeated with sound argument.

Let every student who has a desire to become an influence in his community, and has an ambition to take an active part in the government of his country, grasp every opportunity to express his opinion in all discussions in the Literary Society. He may have little to say, and may be monotonous to his fellow students, but still this is his privilege, and anyone is foolish not to take advantage of it. When called upon to take part in a debate choose a subject which is practical and timely. Do not debate upon abstract theories that have exhausted the wind of many orators for many years, but come down to something concrete. Then, besides being benefited by the platform practice, a person becomes informed upon some subject that will be of use to him after the debate is over. When we have chosen a subject it is well that we should debate on that side of the question which we feel to be right. In this way the debater can put more energy and enthusiasm into his speech than if he felt he was expressing

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However, it seems hard to get a debatable subject which offers equal chances to each side; and this is especially so under the present system of judging as practiced in our sub-societies. Judges are chosen from the student audience, who, in nine cases out of ten, have not studied the question at issue, and, therefore, cannot judge the relative merits of the arguments advanced. A list of "points" are jotted down and that side which is able to advance the most "points" is given the credit of winning, without any consideration being given to the relative merits of these points. Now, this is wrong to the debaters, to the question at issue, and to the audience. One side may advance several "points" and the opposing side may be able to get only one or two arguments, but these so overwhelmingly important as to decide the question in a popular sense. By adding the points the first side naturally wins. This is enough to anger any debater and discourage many; it makes the decision appear unfair to the audience, and holds the question up to ridicule. Now, we do think that the debate should be decided in some manner, and, if it is to be decided, we think that it should be left in the hands of a capable committee of adjudication, or should be submitted to a popular vote of the audience.

* * *

Since college opened, certain persons have made a systematic practice of taking clippings from the periodicals posted in the Reading Room, and in many other ways disfiguring these

papers so as to render their matter unintelligible to other readers. As the Reading Room is to a great extent left in the hands of the students, no action has been taken by the authorities, and the students have been somewhat lax in hunting out the offenders. However, we believe that action has been taken, and that a certain number of students have formed themselves as a vigilance committee. This a right step, and the best way that such vandalism can be stopped. Let everyone who has an interest in the Reading Room join himself to this committee and keep a close watch for an offender. The person or persons who have been in the habit of cutting the papers will take warning, for anyone who is so selfish as to entirely forget the rights of his fellow-students and to commit such wanton destruction shall be summarily dealt with.

* * *

A very useful reminder of their high-class manufactures has been received from Sawyer & Massey Co., Limited, Hamilton, in the form of a colored map of Ontario. The advertisement of this progressive and reliable firm will be found on the first page of this paper.

* * *

Our readers will notice a new departure, which was begun in our January issue, by the insertion of engravings of ex-students. This move, we are sure, will be highly appreciated by all. For a number of the photographs which will be used we are indebted to J. B. Spencer, B.S.A., Agricultural Editor, Family Herald and Weekly Star, Montreal.

Personals.



Prof. A. M. Soule,
Director and Agriculturist, Tennessee
Experiment Station.

Prof. A. M. Soule, B.S.A., chairman of the Agricultural Department of the University of Tennessee, Director and Agriculturist of the Tennessee Experiment Station, graduated from our college in '93. Spending the intervening years in agricultural instruction work in Missouri and Texas he was called to Tennessee in the spring of '99.

Vice-Director of the station since his arrival, he was, at the commencement of the present year, appointed to its Directorship.

Prof. Soule is also Secretary of the East Tennessee Farmers' Convention, an old and influential organization.

G. S. Harris, '98, is farming in British Columbia.

R. Musgrave, '89, lately of McGill, has taken up engineering.

B. W. Gonin, '94, is walking St. Mary's Hospital, Paddington, London, Eng.

E. J. Edelstein, '94, is engaged in nursery work at Ealing, near London, Eng.

H. E. Clunn, '93, is attending the Dairy School in connection with this institution.

W. J. Elliott, B.S.A., '95, conducts a furniture business at Grenville, Minn., and is doing well.

J. Counsell, '92, and B. C. Thomas, '91, are fruit growers in the neighborhood of St. Catherines, Ont.

F. S. Jacobs, B. S. A., '98, called at the College on the 7th inst. He is with the Farmers' Advocate, at London, Ont.

W. H. Gunn, '99, who has experienced a severe attack of pneumonia, is regaining his health at his home in Ailsa Craig.

Arlingham H. Burdett, '91, formerly of McLeod, Alberta, is with the South Rhodesian Constabulary, Bul'owayo, Rhodesia, S. A.

M. N. Ross, B. S. A., '95, has resigned his commission in the 86th Field Battery and purposes taking work in forestry at Biltmore, N. C.

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Prof. R. S. Shaw,

Professor of Agriculture, Michigan Agricultural College.

Prof. R. S. Shaw, B. S. A., of the Lansing Agricultural College, is, like Prof. Soule, a graduate of '93. After leaving college he managed his father's farm for several years. In '98 he was appointed Professor of Agriculture at the Montana Agricultural Station, where he stayed till '02.

In '01 Prof. Shaw was offered the Directorship and Professorships of Agriculture and Animal Husbandry at the South Dakota Agricultural College which he, however, declined.

He was appointed to his present position in July '02.

F. B. Linfield, B.S.A., '93, Professor of Agriculture at Bozeman, Mont., writes from thence. He expresses himself as delighted with the progress of his Alma Mater.

F. J. Lailey, '94, writes from his home at Aldworth Farm, St. Catharines, Ont. He busies himself with the raising of fruit and canning factory crops.

S. Calvert, '86, has been since '94 assistant professor of chemistry at the University of Columbia, Mo. Professor Calvert spent the past year in Germany, studying under several noted chemists.

Ex-students and others will learn with regret that Prof. Brown, at one time connected with this college and now in Australia, after a severe illness brought on by overwork, has become mentally incapacitated. He is at present living in retirement under medical supervision.

A clipping that will be of interest: Another Agricultural College student, Mr. J. S. Jeffrey, has been appointed to a good position in the United States. Mr. Jeffrey took the O. A. C. course in 1886-7, and since then he has been engaged in business in Toronto and St. Catharines, and more recently he has taken up the poultry industry. He has just been appointed to take charge of the Poultry Department of the State Agricultural College and Experimental Station of North Carolina, and will begin work at once.—The Globe.

We acknowledge the receipt of the following: McMaster Monthly, Vox Wesleyana, Canadian Horticulturist, Jay Hawker, Argosy, The Stillwater College Paper, Kansas Herald, Vox Collegii, Arcadia Athaeneum, Rocky Mountain Collegian, Acta Victoriana, Montana Exponent, Industrial Collegian, Trinity Review, Dalhousie Gazette, Smith Academy Record, The Merchistonian, Ottawa Review, M. A. C. Record, Progress.

College Reporter.

The two weeks' short course in stock and grain judging, which lasted from the 8th to the 21st of January, was taken advantage of by a large number of the farmers of Ontario. There were in all over two hundred enrolled. This is only the second year that this special course has been given, still it is, as shown by the attendance, already in great favor. It is a course especially adapted to those who cannot afford to spend several years in taking a full college education; and it comes at that time of the year when anyone so inclined can easily "break away" from duties at home and perhaps put to good use hours that would otherwise be spent to little purpose. However, a means of filling up empty time is not the only thing supplied by this course; it really supplies a standing need. If one would take the time to go from one end of this province to the other he would find that the greater part of its rural population are working at a loss—toiling from daylight to dark, wasting their energies to no purpose and coming out at the end of the year with their profits and loss account balancing on the wrong side of the page; either that, or else but a small difference to credit. This state of affairs exists largely because of the lack of enlightenment. In this age of competition the producer cannot afford to be indifferent as to what he produces or as to the quality of his products. Consumers are critical and whatever is best on the market gets first choice and first money; and what is inferior is either not chosen or sells below a profit standard or perhaps

even below cost. Therefore, to produce the best even at the cost of quantity should be the motto of every farmer of Ontario. To do this the only thing required is to know how, and to know how is the privilege of every one in this day of advancement. Those who spent the two weeks at the O. A. C. will now be in a position to work more intelligently and profitably, and they will never rue the few days that they put in at college. It is to be hoped that each year will find large classes taking the course in stock and grain judging.

On January 27th the Scotch curlers, who are touring in Canada, were in Guelph. On arriving in the city they were met by a deputation of citizens and given a hearty welcome to the *Royal Stadt*. An address was given them by the Mayor and the freedom of the town was conferred. This over, the visitors at once boarded a car, which was gaily decked with bunting, and proceeded to the college. After reaching here an inspection of several of the departments was made as well as the new Massey Hall and Library. As soon as this was done the party all repaired to the college reading room, from which the reading tables had been removed, and for them substituted tables loaded with the necessities and luxuries of life.

The party consists of some of the best curlers afforded by the land of the heather, and needless to say they are enthusiasts of the game. In the afternoon they met in the Victoria Rink the curling clubs of the city and

also clubs from Galt and other places, and although outclassed it was no disgrace to be beaten, for they were up against some skillful followers of the sport. Leaving here they went to Stratford, Windsor and other places.

The programme given by the Literary Society, on Saturday evening, Jan. 31, was indeed a treat. Every number, from beginning to end; was full of merit and admirably rendered. The evening was pleasant and the hall was accordingly well filled.

Prof. Day, the honorary president, gave a splendid address, in which he dwelt mainly upon Success and the factors which lead to it. Of course we always get something good from our Agriculturist and therefore it is useless to say many goodly hints and suggestions were given. The debate, which was on a subject of vital interest in these days, was exceedingly well contested. The speakers on both sides of the question handled their parts well, each one showing thorough preparation and keen insight. The musical part was also well in hand. The selections rendered by the second year quartette were well received; while Mr. Cutting, whose vocal talent is well known here, was compelled to respond to encores. Miss Springer acted as accompanist.

Following is the programme:—

Song.....Second Year Quartette
MESSRS. PEARCE, BELL, WHITE and
LUND.

Address.....PROF. DAY
Solo.....A. B. CUTTING
Debate—Resolved, that Trusts are
beneficial to the general welfare of the
people.

Affirm.—MESSRS. BRAY and DEACH-
MAN.

Neg.—MESSRS. EFTHYHITES and S.
GALBRAITH.

Song.....2ND YEAR QUARTETTE
Judges Report.....MESSRS. HARRISON,
GOOD and MACLEAN.

Critic's Remarks.....PROF. CUMMING
God Save the King.

For a time, during last month, it seemed that a coal famine was about to overtake us. During the colder part of January there was being consumed as high as eleven tons of fuel per day, and we were actually reduced so low at one time that the cellars were entirely empty and all the coal left could be accommodated by the small space in front of the boilers. This was a rather precarious condition since both light and heat were at stake. However, through strict economy and by dint of much hard and diligent searching for sources of coal in the city, (which were few and far between) the situation was saved. Several carloads have since arrived, and now there is a plenteous supply.

On Tuesday, Feb. 3, about 100 students journeyed to Berlin to view the sugar factory at that place. With the party were a number of dairy students, and also several officers of the institution, among whom may be mentioned: Mrs. Dr. Mills, Miss Rose, Miss Major, Prof. Harcourt, Dr. Streit, G. B. McCalla, Prof. Hutt, Mr. Stratton, Mr. Good and Mr. McFeters. Leaving here at 2.45 we reached Berlin some time before 4.00. Here cars were awaiting us and boarding these we were soon at the factory, which is only about a mile outside

the town. Thus ample time was left for a thorough inspection.

The first thing inspected was the bins in which the beets are put when brought to the factory. From the bins the beets are carried to the main building through sluice-ways. On entering the factory proper the first thing confronted is the washers, through which the beets pass and have all traces of dirt removed. Leaving the washers the roots are then elevated to the top of the building, where they pass on to automatic scales which dump them into the slicers, which cut them into small pieces. The sliced beets now pass down a long tube and enter the diffusion batteries where the juice is extracted from the pulp. The pulp, now being no longer needed, is conveyed outside; while the juice, which contains the sugar, is passed through a number of appliances to remove the coloring matter and to extract the mineral salts. Once purified in this manner, evaporation is begun. When evaporated down the residue has the appearance of thick, black molasses, and is altogether different from the beautiful white crystalline substance with which we are commercially familiar. To remove this "black molasses," therefore, the syrup is run into centrifugals which revolve at a high rate of speed. Here, upon the principle of gravitation, the black molasses is thrown out, and what is left is comparatively white. From the centrifugals the sugar is conveyed to the drier, which is in the form of a long cylinder, 7 to 8 feet in diameter. It is in a slanting position and as it revolves the sugar passes down through it. A current of hot dry air is drawn

through which effects the drying. Leaving the drier the sugar passes through sieves, after which it is ready for the barrel. All the sugar is not secured yet, however, for the so-called black molasses which we saw thrown out of the centrifugals, is rich in sugar content. It is therefore reboiled and a second crop obtained and sometimes a third crop. These crops are in turn treated with the centrifugal, and so on as before, while the molasses from them is put through an osmosis process which removes the salts preventing crystallization; or else it is subjected to a process of fermentation and distillation which converts the contained sugar into alcohol. The waste is often rich in different kinds of salts, especially potash. Consequently a valuable potash fertilizer can be manufactured from it; and at the present time a factory is being erected in Toronto for that purpose.

We see that from the time the beets leave the bins into which they are dumped from the wagons, until they are reduced to purified sugar, not a hand is touched to them. Everything is done by labor-saving machinery. Hundreds of tons are consumed each day and the amount of labor required is reduced to a minimum. This factory has an average daily output of 400 barrels.

About 5.45 the party left the factory and returned to the town where supper was obtained. As the train for Guelph did not leave till 9.15, plenty of time was had to view the town and several availed themselves of the opportunity. When 10.30 o'clock arrived all were again safely at the O. A. C. Everyone has reported a good and profitable time spent, and all thanks are due Prof. Harcourt, our chemist, who secured the outing, and who so ably escorted us and explained things at the factory.

Athletics.

Owing to the warm weather of the past few weeks, the college outdoor rink has not been in shape for use. Hockey has therefore been almost at a standstill. Only two games have been played with outside teams. The Sophomore team played the G. C. I. team, on Victoria Rink, and defeated them, after a hard game, by a score of 4 to 2. On Friday evening, Feb. 6th, the college team went to Elora to play with the Elora team. They were beaten by a score of 5 to 3. The Elora rink is small and badly lighted, so that the boys were playing at a disadvantage, even the referee had to play a guessing game.

A meeting of the Athletic Association was held early in the term for the purpose of electing a hockey captain and other business. L. B. Tufford was appointed to act as captain of the college hockey team. A letter re college pins, from Mr. Pringle, jeweller, of Guelph, was read to the meeting. He asked the Athletic Association to adopt some standard design of a college pin. He offers a gold pin as a prize to the student who will draw out a design which will be acceptable to the association. A committee consisting of Messrs. Irving, Reed, Hamilton and Galbraith was appointed to get designs and consult with the staff as to the most suitable form of pin to adopt. The design adopted will be used on all the prizes and medals given by the Athletic Association.

INDOOR SPORTS.

The committee appointed last term to arrange matters for the indoor sports, has made up a list of events for Sports Day. There will be no contests in wrestling this year. During the last few years, owing to the lack of a proper instructor, the wrestling events have been trials of strength and physical endurance, rather than trials of skill and quickness as they should be. Another class has been added to the boxing events, making four classes in all, namely: featherweight, lightweight, middleweight and heavyweight. This year, more than any previous year, the need of instruction in physical exercises and other gymnasium work, is apparent to everybody. In other years instruction in drill was given by Capt. Clark, but even this has been discontinued, and during the first few weeks of the term the gymnasium was reserved entirely for the short judging course. In a college such as this all the time should not be devoted to mental gymnastics; a part of the time at least should be devoted to physical development. The caretaker of the gymnasium should be an athlete who is able and willing to train others, and we hope that in the near future such will be the case.

The committee of the Athletic Association, ably assisted by Mr. Milligan, is putting forth every effort in its power to boom athletics and make next Sports Day a grand success.

HOCKEY.

THE CITY LEAGUE.

A hockey league has been formed in Guelph by teams representing the

Bankers, G. C. I., O. A. C., Hardwaremen and the Moulders. The teams will compete for the medals donated by Mr. Robt. T. Hamilton.

The league is entirely under the control of the Victoria-O. A. C. Hockey Club. They will arrange all the games, do all the advertising, stand all the expenses, and take 50 per cent. of the gate receipts. A committee, on which each team has a representative, has been elected to deal with protests, etc. The clubs will play with seven men on a side. All games will be played under O. H. A. rules. Every player must have certificates signed by the president and secretary, permitting the player mentioned therein to play with the team signing him.

The officials of the league were elected as follows:

President—F. L. Smith.

Secretary—H. C. Macdonald.

Executive Committee—R. Cutten, Hardware; G. Herron, Bankers; R. E. Gunn, O. A. C.; H. C. Macdonald, G. C. I.; F. Washburn, Moulders.

The board of referees is composed of N. E. Irving, Prof. Doherty, W. Squirrel and R. T. Hamilton.

The following schedule was drawn up:

Jan. 28—G. C. I. vs. Bankers.

Feb. 2—Hardware vs. O. A. C.

Feb. 7—Moulders vs. G. C. I.

Feb. 11—Hardware vs. Bankers.

Feb. 14—Bankers vs. O. A. C.

Feb. 18—Hardware vs. Moulders.

Feb. 23—Moulders vs. Bankers.

Feb. 28—G. C. I. vs. Hardware.

Mar. 4—G. C. I. vs. O. A. C.

Mar. 9—Moulders vs. O. A. C.

Locals.

Rankin, experimenting with asbestos: "Wouldn't this be great to make graveclothes out of?"

—

S. Galbraith evidently thinks that the infinitive with "ing" would be tougher splitting than the ordinary variety.

—

McVannel's motto now is: Pray without ceasing and without laughing. But he admits that it is easier to pray without ceasing laughing.

—

We were considerably surprised to find that the 2nd year quartette was made up of three sophomores and a freshman. Perhaps they meant to call it a "triplet."

Prof. Graham, before beginning a lecture: "Are you all here?"

McKillican: "Yes. All of us are here, but the rest of us aren't."

—

When McKim spoke of "green sages" as being a variety of plum, the professor was somewhat puzzled. It certainly was a "green" remark for a "sage" to make.

—

Oh, there was a man named Taylor
And he smoked his first cigar;
But the wicked little Frenchman
Had loaded it. By gar.

So that fatal night; 'twas Sunday;
He was found upon the bed
With a pair of dripping towels
Twisted tightly round his head.

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Overheard on Lower Panton:

"Let's go down to Craig St. one of these nights and dump all the fellows. They've got only one "Gunn" left on the flat now."

Prof. R., in Physics: "Define wasteful gravitation."

Freshman: "The affinity existing between a fellow's arm and a girl's waist."

Prof.: "That would not be wa(i)steful but (h)armful."

Class in English.

Prof. R.: "Would it be correct to say, Mr. B—, that Charles I. was distinguished?"

Voice in the rear—"No; extinguished."

McB.: "Do not filoplumes help to keep the birds warm?"

Prof. H.: "Well, personally, I should not like to go out on a frosty morning with nothing on me but filoplumes."

Economics.

"Eh; what! Deachman, a schoolhouse wouldn't add anything to the value of any locality as far as you are concerned; did you say? O, yes, I see; you don't count your chickens before they're hatched."

Third year chemistry class.

Prof. H.: "There are over 80,000 different alcohols."

Barber, *sotto voce*, in horror: "And yet they call this a temperance country."

Prof. H—t: "This experiment, gentlemen, has been worked to determine the relative values of the small end, the large end and the *middle* end of a potato for planting."

The Dean, to class in "Tennyson":

"On her pallid cheek and forehead came a color and a light"

"As I have seen the rosy red flushing in the northern night."

"Oh! There is no need to explain that, boys; you have all seen it."

Query? Was it the Aurora Borealis that he referred to, or what? Possibly what.

It was remarkable that for a few minutes after the students were warned against exposing themselves to the weather in any manner likely to bring on an attack of influenza, half of the students appeared to be suffering from galloping consumption in its most acute form.

Prof. R. in Rhetoric Class:

"Correct the following, using simple and natural expression in place of slang. Ex.—'They were rather down in the mouth.'"

R. E. Gunn: "They felt their necks."

Eftyhites, in Agriculture class:

"Alsike clover has exceedingly long roots, by means of which it draws up potash and phosphoric acid from the *lower regions*."

Prof. Day, "Are you sure it isn't sulphur you mean?"

Something that all the students would like to know:

Why has that magnificent St. Bernard, belonging to C.W.K., of Guelph, been wandering around near the secretary's office?

For the beast and the bird hath seen and heard that which man knoweth not.

Prof. Jarvis: "Explain the difference between the flat-headed borer

and the round-headed borer."

MacAulay: "Difference in size."

LeDrew: "Why, of course, one is round-headed and the other is flat-headed."

THE LATEST BOOKS.

"Reflections on Religion," by Eddy: being a careful comparison of purgatory and the pupa stage of an insect.

"My Lady Nicotine," by "Doc" McFayden. For truly it is said, a man will leave the residence behind him and cleave unto his pipe.

Archie McK, the morning after, as he slides down to the breakfast table at 7.26 a. m., with his coat collar turned up:

"Waitah! Hi guess Hi'll take a piece of pie."

A case of Superposition.

"Shady" in judging class: "No; I don't like that sheep somehow. Its leg of mutton is too high UP ON ITS RUMP."

A few things that the first year would like to know:

1. What Fairman lost in Chalmers church a few Sundays ago. Was it a hymn-book or a "her" (without the book?)

2. When Smillie is going to close the deal with regard to that threshing machine, which he has contemplated buying.

3. How much zoology they ought to know, and when they are going to know it.

4. Why Murray-Wilson did not go to Berlin with the crowd? He certainly enjoyed himself the last time that he was there.

THE STUDENT'S REVERIE.

A junior was recently heard to express his little tale of woe in the following lines:

Backward, turn backward, oh, time in thy flight:

Feed me on gruel again, just for tonight.

I am so weary of sole leather steak,

Petrified doughnuts and vulcanized cake:

Toast that slept in a watery bath,

Butter as strong as Goliath of Gath.

Weary of paying for what I don't eat,

Chewing up rubber and calling it meat.

Backward, turn backward, for weary I am:

Give me a whack of my grandmother's jam:

Let me drink milk that has never been

skimmed,

Let me eat butter whose hair has been

trimmed.

Let me once more have an old-fashioned pie,

And then I'll be ready to turn up and die.

Obituary.

Never has it befallen THE REVIEW to perform so sad a duty as that which lies before it at the present moment.

Since the New Year commenced two of our professors have each suffered the loss of a parent and to lose both has been the lot of another.

The mother of Prof. Harcourt, residing at Smithville, was, on New Year's Day, stricken down with paralysis. Despite all efforts, the stroke proved fatal three weeks later.

At Atwood, his home for many years, after a long illness the father of Prof. W. Lochhead recently passed away.

On the 9th of this month there died at Southend, the mother of Prof. Hutt. On the 17th our professor was doubly bereaved, for his father too had passed away.

On behalf of the student body THE REVIEW respectfully offers to those in sorrow its sympathy in this their time of sore affliction.

Some Biological Notes.

A swarm of bees chased Willie, till the boy
was almost wild,
His anxious parents wondered why the bees
pursued the child.
To diagnose, they summoned their physi-
cian, Dr. Ives,
"I think," he said, "the reason's clear, our
Willie has the hives."

—Widow.

"I'm so tired this morning," said
the first moth. "Up late last night?"
asked the second. "Yes," replied the
first, "I was at a camphor ball."

**CONCERNING NEW MEXICO, AND THE WORK
OF THE GREAT ARCH-FIEND:**

He scattered tarantulas along the roads,
Put thorns on the cactus and horns on the
toads.
He mixed up the sand with millions of ants,
So those who sit down need half-soles on
their pants;
He lengthened the horns of the Texas steer,
And put an addition to jack-rabbit's ear.
He quickened the step of the broncho steed,
And poisoned the feet of the centipede.
He put juajalota in all the lakes,
And under the rocks hid rattlesnakes.

Grading up Cereals.

JOHN FIXTER, EXPERIMENTAL FARM,
OTTAWA.

Our method of selecting, cleaning
and storing seed grain is as follows:
We select enough grain of the largest,
heaviest, and best yielding sorts that
we can secure, also select from the
best we have on hand, plant those
side by side the first year in rows 1
foot apart, the plants to be left about
6 inches apart in the rows. The land
is kept clean until harvest. When
ripe, all the best plants are selected
and a second selection made by taking
the best heads of each plant. These
are threshed and thoroughly cleaned

and screened. After the second year
we usually have sufficient seed to sow
several acres. When selecting and
cleaning for field crops, after the grain
is threshed, it is put through a fan-
ning mill. The sieves are arranged so
as to allow all the coarse material to
go over the back of the machine, and
screens are set to take out the small
grain and seeds, at the same opera-
tion. We put on all the wind possible,
blow all the light grain over the back
end of the machine. Should we not
have a choice sample we run the grain
through the machine a second time,
close off the wind, put in all sieves to
act as screens and run the choice grain
over the back end of the machine.
With this operation there should be
no small grain nor weed seeds left.
We ascertain what amount is required
for spring sowing, weigh it out, bag
it up and keep it in perfectly dry clean
bins that are rat and mouse proof
until time for sowing.

—
PROF. JAMES ATKINSON, DES MOINES, IA.

For cleaning seed grain on the farm
the free use of the fanning mill is the
most common method of grading up
small cereals. A great many experi-
ments have been conducted which go
to prove that the selection of the
heaviest grain from year to year will
work an improvement, not only by
way of increasing the yield per acre,
but also the weight per bushel. I have
in mind an instance of this kind, where
a farmer who grows 2,000 acres of
oats annually, has succeeded in im-
proving his seed by this method to
such an extent that it is not an un-
common thing for him to obtain an
average yield of 80 bushels an acre
over his entire area, the seed of which

weighs 40 pounds per bushel. The selection of a few of the best grains from each head, which is practically what takes place when the fanning mill is used judiciously, is similar to that of choosing the best pig out of a litter, or the keeping of the best heifer from a certain cow for the purpose of working improvement in the herd. When I advise the use of the fanning mill I have in mind cleaning out the best half of the seed, or possibly the best third. So much the better if a little pains can be taken in securing the seed from the part of the crop that has given the most satisfactory returns. This might be done by choosing a load or two and storing this where it could be specially set apart for seed. The time of ripening may be materially changed in the course of a few years by selecting from that part of the field which ripens first, or if it

is desired to delay the ripening period, the grain may be chosen from such portions of the fields as are latest in maturing. Although the prime object in all this work of improvement is to increase the yield per acre, yet it should be kept in mind that strength of straw and freedom from rust and smut are important factors that contribute to the end sought. This should play a prominent part in enabling one to decide on the part of the crop that should be saved for seed.—Family Herald and Weekly Star.

Some Farm Maxims.

Don't forget you can get analysis of soil, feeding stuffs and manures made very cheaply.

Recollect that light soils lose and heavy soils gain by being exposed to the action of the atmosphere.

The **BIG** BOOK STORE

CHAS. L. NELLES,
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O. A. C. Books and Requisites. Complete stock. Fountain Pens for Students, \$1.00.

NOTE
CLOSE
MESH
AT
BOTTOM



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A bird cannot fly through as small a hole as it can crawl through, so Page Poultry Netting is made with small meshes at bottom and large at top. No. 12 gauge wire top and bottom—no sag. Get Page fences and gates—they're best.

The Page Wire Fence Co., Limited, Walkerville, Ont.
Montreal, P. Q., and St. John, N. B. 8

Alva Farm Guernseys.

Awarded First Prize at Montreal for Breeders' Young Herd.

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