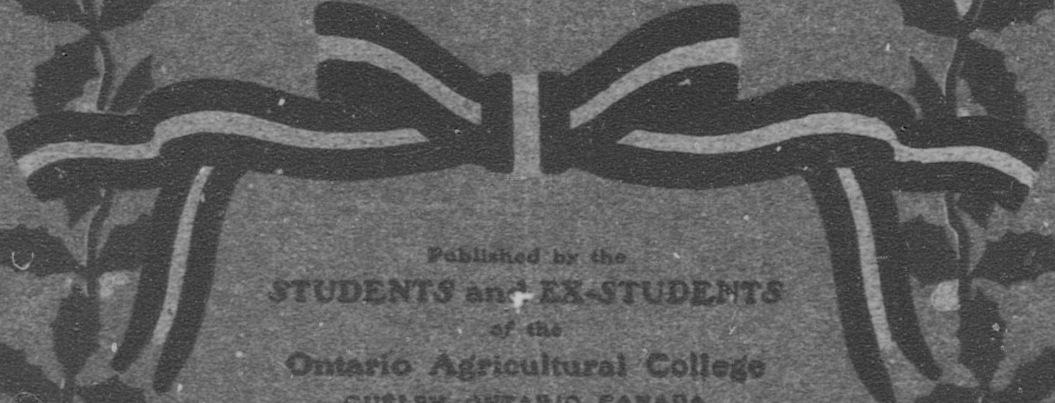




O.A.C. REVIEW



Published by the
STUDENTS and EX-STUDENTS
of the
Ontario Agricultural College
GUELPH, ONTARIO, CANADA

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NUMBER

DECEMBER
1902

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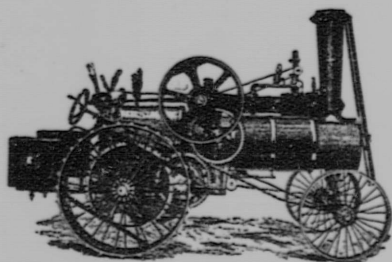
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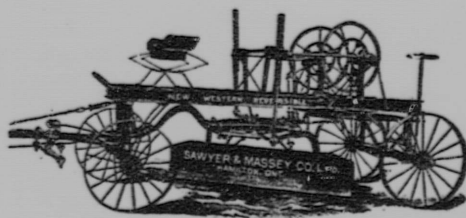
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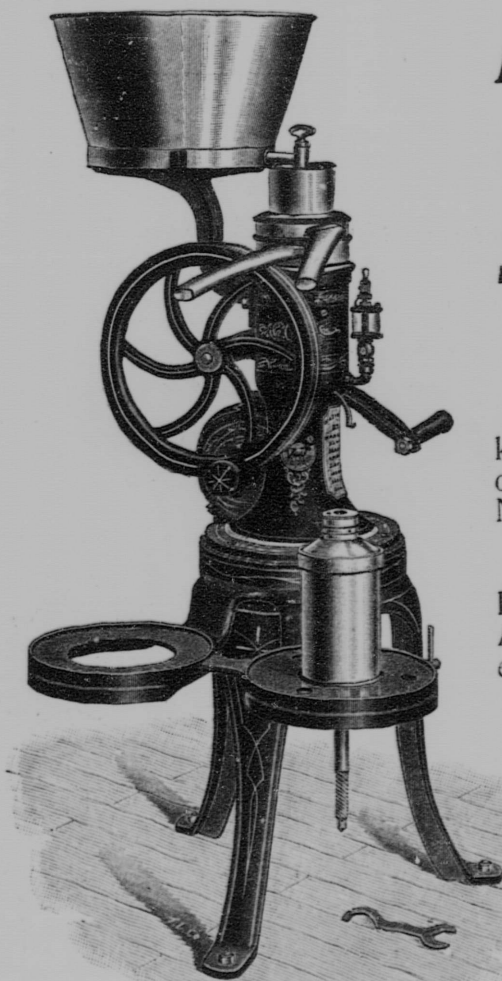
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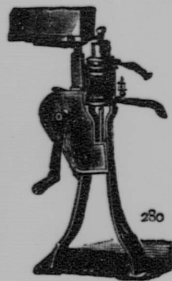
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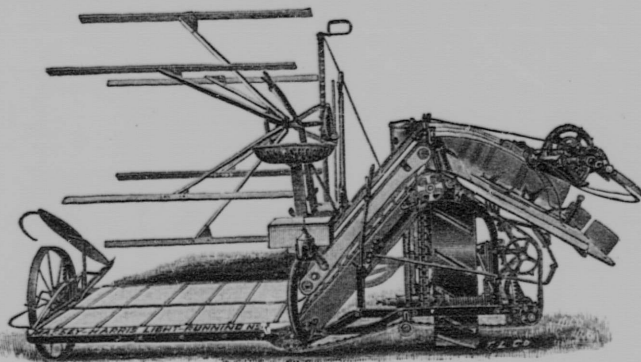
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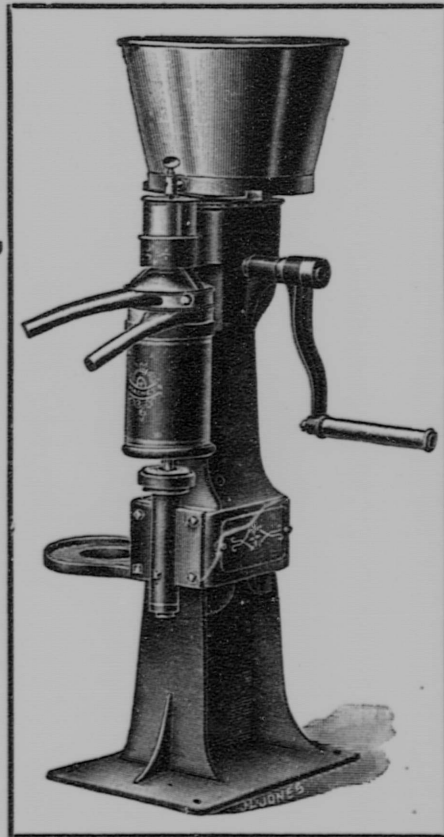
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THE O. A. C. REVIEW

Published monthly during the College Year by the Students of the
Ontario Agricultural College, Guelph.

THE DIGNITY OF A CALLING IS ITS UTILITY.

V I. XV.

ONTARIO AGRICULTURAL COLLEGE, DECEMBER, 1902.

No. 3.

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OUR COLLEGE.

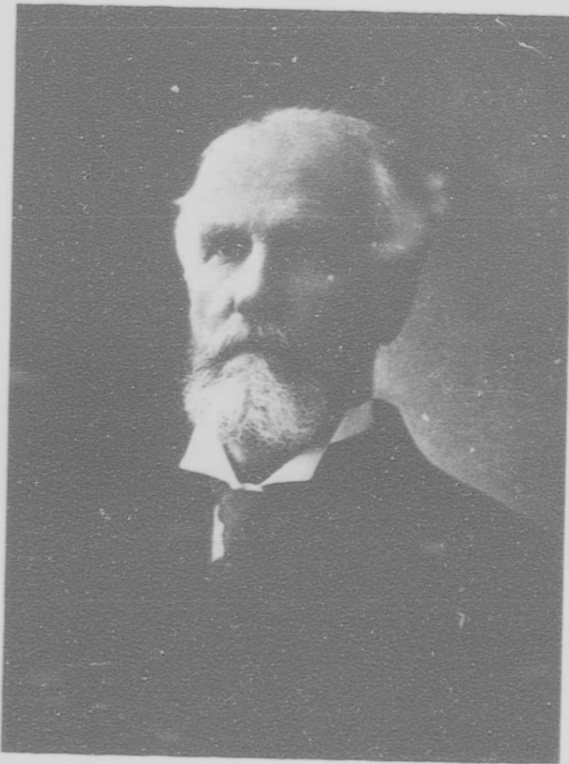
THE Ontario Agricultural College has arisen out of small and not altogether auspicious beginnings to a position of commanding influence in the province. It has in the past met with much captious opposition, and with some well-deserved criticism. Today the fashion is to speak well of it. The aim of the College should be and it may be affirmed, in a large measure is, to pay little attention to the mere rumor of praise or of opposition, but to perform faithful and adequate service for the province.

The manner of its inception, and the history of the early years of the College, are matters too well known to readers of the REVIEW, to require repetition here. The changes and advancement during the last few years, however, have been rapid, and hence a comparison of present conditions and methods with those of a few years ago may prove not uninteresting.

Nine years ago, when the present

writer joined the College staff, the Dairy School Building was just being completed, and the session of the Dairy School was held there in the winter of 1894. The Experimental Building was not then in existence—the apartments now occupying that building had quarters elsewhere. The Live Stock class-room was then in the part of the main building later occupied by the Department of Physics. The front part of the class-room was at the level of the present cellar floor, and the seats rose toward the back until they reached the level of the ground floor. The cellar underneath the room now occupied by Mr. Cumming—next to the class-room—was used to stable the horse of the veterinarian, while that officer was at lectures. The Experimental Department at that time enjoyed the freedom of the basement under the old Chemical Laboratory. The Department of Bacteriology had not then been instituted.

At that time, afternoon instruction



DR. MILLS.

in the laboratories and elsewhere was a privilege accorded only to the third-year class. The study divisions of the First and Second years assembled five afternoons a week, from 1.30 to 4, in No.

1 class-room, under the supervision of a master, to read, to study, and—to sleep. This afternoon refreshment of mind and body enabled those who were fortunate enough to enjoy it, and who were so disposed, to hold high carnival in the late hours of the night.

Since that date, nine years ago, extensive additions have been made in our building equipment, and equally extensive changes in our course of instruction. First came the experimental Building, with its two class-rooms—the agricultural and live stock, and the bacteriological; the offices, work-rooms, and museum of the Experimental Department; the office and laboratories of the Department of Bacteriology; and the office of the agriculturist. Simultaneous with the erection of the Experimental Building was the conversion of the old live stock

class-room into quarters for the Department of Physics, the one room being used for combined class-room and laboratory, and the room adjoining --the old bone-room--was pressed into



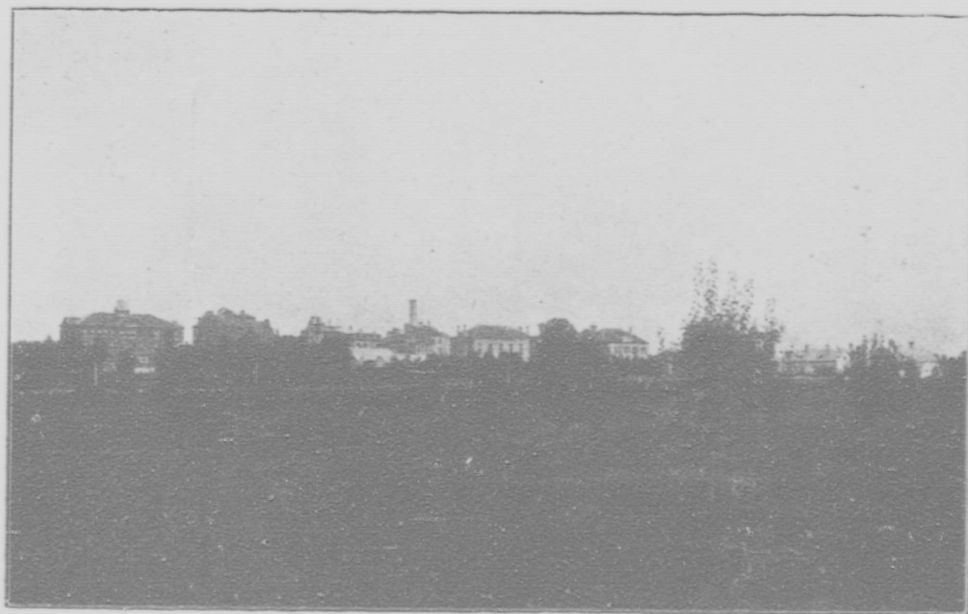
DAIRY BUILDING.

service as an office. Shortly afterwards the old Chemical Laboratory was burnt, and the present laboratory, much more commodious and up-to-date in its appointments than the old one, was erected on the same site. From that time until 1901, no building of any consequence was undertaken at the College. In 1901 came the magnificent gift of the Massey estate, in the form of \$40,000 for a combined hall and Library. The Hall, with a few other rooms such as seminaries and bedrooms for assistants at the College, is on the ground floor, and has a seating capacity of 350. Immediately above the Hall, on the first floor, is the reading-room, and adjoining it is the stock-room. Both the reading-room and the stock-room are provided with the most modern fixtures. The interior of the building is finished throughout in polished black ash. Altogether, the Library and Hall is highly creditable to the taste and judgment of the donors.

In the same year, 1901, the Govern-



MRS. CRAIG.



GENERAL VIEW OF COLLEGE.

ment voted a sum sufficient to erect the present Biology-Physics Building, which, together with the new Library, was made necessary by the increased attendance of students at the College, and the consequent demand for more residence accommodation and more laboratory equipment. The new mu-

tioned have been completed and furnished. A large live stock judging pavilion is being erected, for the accommodation of the special short-course classes; a small cold storage plant, for experimental purposes, is nearing completion; and the excavations have been begun for the MacDonald Institute.



MASSEY HALL AND LIBRARY.

seum occupies the ground floor, and of the first and second floors the Department of Biology is on the left, and the Department of Physics on the right.

The present year, 1902, has not been without its additions to college equipment. The two buildings last men-

All these additions signify two things: The attendance at the regular college courses has rapidly increased, and had outgrown previous accommodation; and the College is putting itself into more intimate relation with the Province, and is preparing to render

more efficient service in more ways than ever before. In the regular courses of instruction the tendency is to become more practical—hence the large laboratories that have been added in recent years. The graduate course, formerly a three-year one, has been extended to four years, making an extra class now in attendance. In addition to the regular two and four-year courses, several short courses have been

that soon. It is not a question of classroom accommodation, or of lectures. One may as well lecture to a hundred students as to ten. Other parts of our equipment, even with the recent large additions to laboratories and residence, are already overcrowded. Particularly is this true of the residence, which this present year is woefully inadequate to our needs. Further, if the increase extends beyond a certain limit, a cor-



BIOLOGY-PHYSICS BUILDING.

added, and thereby the number of persons receiving instruction directly at the College has, within the last two years, been multiplied many fold. The MacDonald Institute about to be erected will still further increase the immediate College constituency.

Are these enlargements to continue indefinitely, or will there be an end? Unless the cost of maintenance is to be enormously increased, there must be an end to the increase in attendance, and

responding increase in the instructing staff will be a necessity, for the laboratory method of instruction does not allow of indefinite extension of numbers in classes. The College will certainly move in the direction of least resistance. Which direction shall that be—to put a stop to increases in attendance, or within the near future to enlarge the residence and add to the teaching staff?

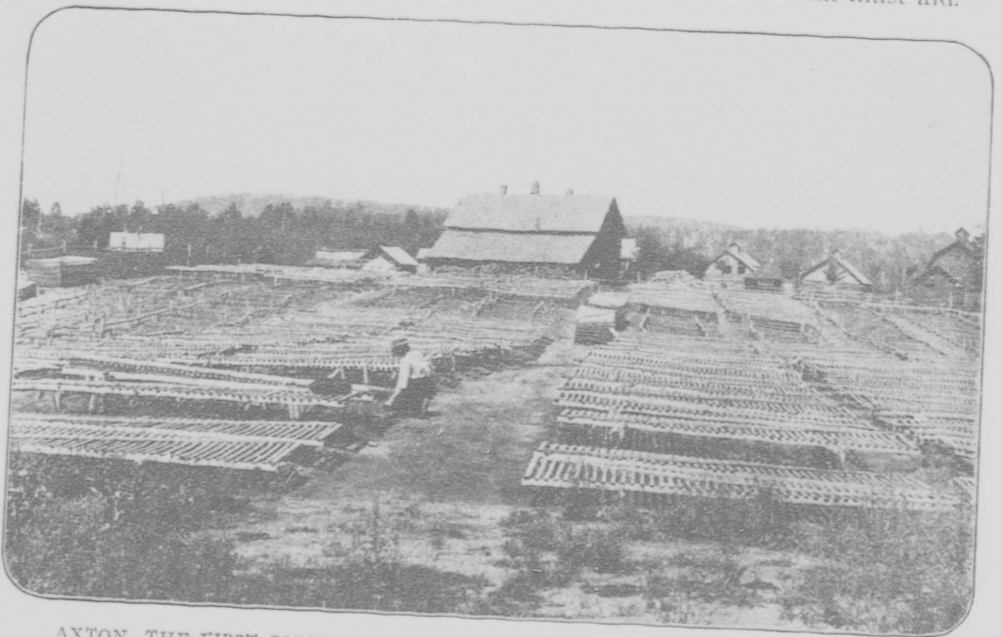
J. B. REYNOLDS.

FLEETING THOUGHTS ON THE NEED OF FORESTRY.

NATURE grows forests without the aid of man. She has produced the magnificent giant conifers of the Pacific Coast, and the valuable pines and spruces, mixed with hardwoods in our eastern forests. The material

hitherto on this continent, to teach which, colleges and schools are preparing everywhere?

There can be only one answer, namely, that Nature alone, after all, is not able to do what man requires; that for some reason man must aid.



AXTON, THE FIRST COLLEGE OF FORESTRY IN NORTH AMERICA, WITH NURSERY CONTAINING A MILLION SEEDLINGS FOR TRANSPLANTING.

which these nature-grown forests have furnished, has been most satisfactory, and no improvement on nature by man has been necessary, as in the case of agricultural production.

Why, then, shall we not let Nature continue to produce again, what she can do unaided? Why do we not trust to Nature's power of recuperation? Why ask that skill be applied in this direction, *i.e.*, that forestry be practised? What is the justification of calling for this new art, unpractised

And the reason, the direction in which Nature fails, is that she has no idea of economy in time or space, being most wasteful of either; while man, with the constant increase of population, is forced to use both time and space more and more economically, and for the strict purposes of his needs.

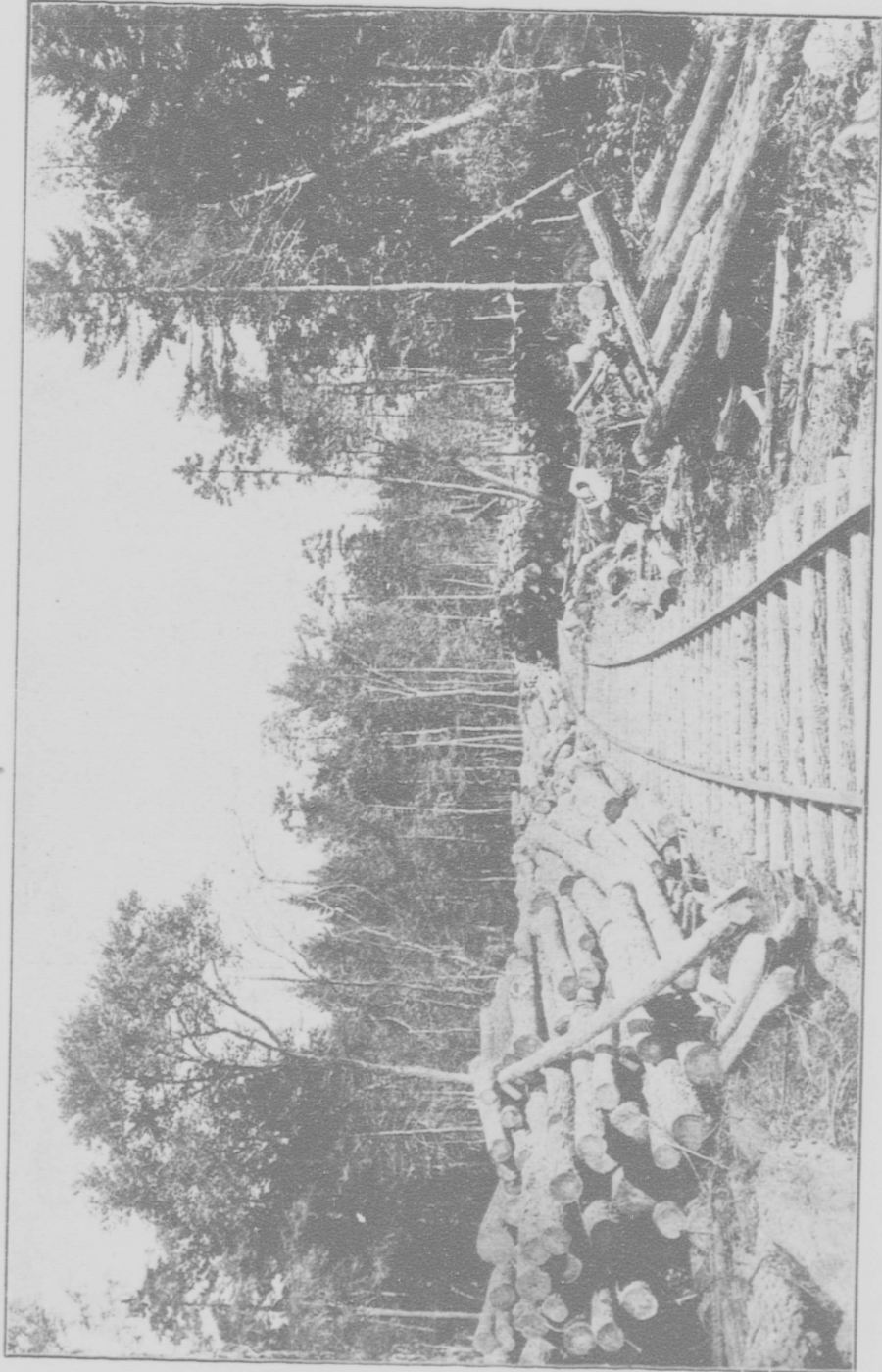
Forestry is the child of necessity. If Nature's stores of wood materials were inexhaustible, or if she were replacing them as fast as we use them, there would be no need of forestry.

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HARVESTING THE FOREST CROP.

It becomes, then, every forester who wishes to justify his existence to be prepared to show that this necessity has arrived, that Nature's stores are not sufficient, and that unaided she is not replenishing them, and is not able to do so.

A study of statistics of wood consumption, past and present, and of forest conditions of the world, will give an insight into the question, and finally

economically speaking, not very valuable woods of the tropic and semi-tropic zones.

Unfortunately, the art of gathering forest statistics is as yet imperfectly developed, and was formerly still more imperfectly understood or done. Hence, if we make comparisons of past and present, not only must we realize that, with statistics of the present, we remain away from the truth, and



THE KIND OF BRUSHLANDS ON WHICH THE N. Y. COLLEGE OF FORESTRY PLANTS PINES AND SPRUCES.

we can narrow the inquiry to the more highly civilized nations of the north temperate zone. For not only do these nations make much greater demands on forests in proportion to their numbers, to keep pace with their great industrial development, but they also possess those kinds of woods which are most useful for the purposes of civilization—purposes which cannot be supplied by the highly ornamental, but,

mostly below the truth, but that the statistics of the past were still more farther from and below the truth.

If, therefore, we find that during the last fifty years the wood consumption per capita in Great Britain has risen 200 per cent, that it has increased by more than double that figure in Germany and France, we may in part credit the difference to this relative discrepancy in earlier statistics. Yet

the difference is too great to be altogether so explained, and we are entitled to draw the conclusion that, *with increase in civilization and industrial development, our needs for wood are constantly increasing.*

This is a conclusion which we might have made *a priori*, but here we have it proven by figures, which are the more striking since it has been supposed that with greater development of coal, iron, stone, etc., these substitutes for wood would reduce this requirement for wood. History so far has proved this assumption wrong.

In the United States, and supposedly in Canada, we find the same tendency to increased wood consumption by comparing the consumption statistics from decade to decade. And this, in spite of the enormous per capita consumption originally much greater in comparison with other nations; for while Great Britain, importing practically all her requirements, and hence inclined to be careful with wood, uses eighteen cubic feet per head, and while Germany importing about 20 per cent. of her consumption (worth eighty million dollars) uses somewhat over forty cubic feet, the people of the United States, with a lumber product of over 35 billion feet, B.M., use over eighty cubic feet; and Canada *exports* alone over 140 cubic feet per capita of her population. Now comes the inquiry, where do the supplies come from? The compiler of the statistics of the lumber industry in the last U. S. census, rather timidly, to be sure, guesses the amount of standing timber in the United States, ready for the axe, at 2,150 billion feet, a figure very nearly the same as the estimate of the writer made a few years ago upon an entirely different basis. Allowing for the natural increase in consumption, the naturally grown supplies would appear hardly sufficient for forty years, and if we consider only that most important part

of our wood consumption, the conifers, pine, spruce, fir, etc., the matter stands still less hopeful.

To be sure, there is even without the aid of man new timber growing on the areas which are not turned into farmland, or are not burned over and over again, and are allowed to grow up.

There are, perhaps, five hundred million acres in the United States, capable of growing new supplies without artificial help. How much can they produce? The thirty-five million acres of forest in Germany, most of them under skilful management, produce in the average fifty-six cubic feet of wood per acre per year, of which, however, not more than sixteen to seventeen feet is log or bolt size material. Hence, under the very best management, our acreage can annually supply more than the present requirement. But so far, at least, no such management exists. On the contrary, much of the woodland is annually or periodically scorched by fires, which destroy the young growth and damage the older trees. No regard is paid to reproduction; and, moreover, where from the mixed forest the desirable species are culled and the undesirable left, these latter naturally occupy with their progeny the openings; there may be new growth, but it is in many, perhaps most, cases not of the right kind.

Now, it takes, under good management, from sixty to one hundred years, at least to make saw timber worth cutting; the trees of the natural forest, which we think worth cutting, are usually double that age and more.

Is it time to begin the work of recuperation? If we have any regard for the needs of the future, we have waited too long. While there may not be as yet incentive for private endeavor in that direction, a thoughtful, statesman-like government at least should make a beginning without delay.

The United States may, at least for

a time, expect to rely upon Canadian imports—there is no other country from which she can draw. But is Canada rich enough in forest resources to furnish supplies for along time under a mere system of exploitation? Although the statistician of the Dominion credits her with about 800 million acres of woodlands, there is probably not more than 350 million acres available and producing material fit for export. From this acreage, even if it were still uncut and unculled, and if Canada stopped all exports to Great Britain and other countries, she could not supply the requirements of the United States for twenty-five years. So far, her exports do not even equal those of the United States in value, but an increase must come soon, as the needs of her neighbor increases. The wise policy here also is to place the remaining timber under forestry management, *i. e.*, to see to its systematic reproduction, wherever the soil is better adapted to timber growth than to other use. The establishment of forestry schools to educate the foresters for such a management is, of course, the first step. The State of New York was the first to set the example four years ago, and

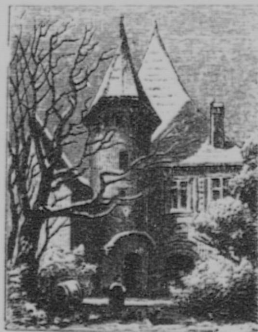
a number of States, or at least universities and colleges in other States, have followed.

Since much of the cut-over woodlands have been culled of the species which are most desirable to reproduce, their re-establishment can only be secured by planting them. This can often successfully be done only after the removal, total or partial, of the remnants of old timber of undesirable kinds, a problem not easily solved if it is to be done with regard to the expense account.

Whatever may be possible to do in the uncut, unculled virgin woods in the way of cutting judiciously so as to secure a desirable aftergrowth, on the cut-over, culled lands, the practice of forestry means *present expenditure for the sake of future returns, and that a distant future*. Who but the State can afford such an investment, which cannot bring returns much short of a century?

If for no other reason than the time involved, forestry is a business which principally interests the State, the representative of the community at large, the guardian of the future!

B. E. FERNOW.



AGRICULTURE IN UTAH.

FOR the Easterner who visits the great West for the first time, there are many surprises. In the first place, he judges western things by eastern ideas, and he finds he is more often mistaken than not. In the matter of distances he is always in error. Perhaps he is driving, and asks a native how far it is to a town plainly visible on the road before him. The native replies, "Ten miles," and the eastern man says, "Well, I'd undertake to

and added that I supposed it would be about half a mile. My friend gave a hearty laugh, and replied that the distance was well known to be three miles. It seems that in travelling west one has to reconstruct his ideas, and change his view-point as he does his watch.

A glance at a map of the United States will show that the State of Utah is in the heart of the inter-mountain region or the centre of the great arid West. To one brought up in a humid country, an arid land is quite unknow-

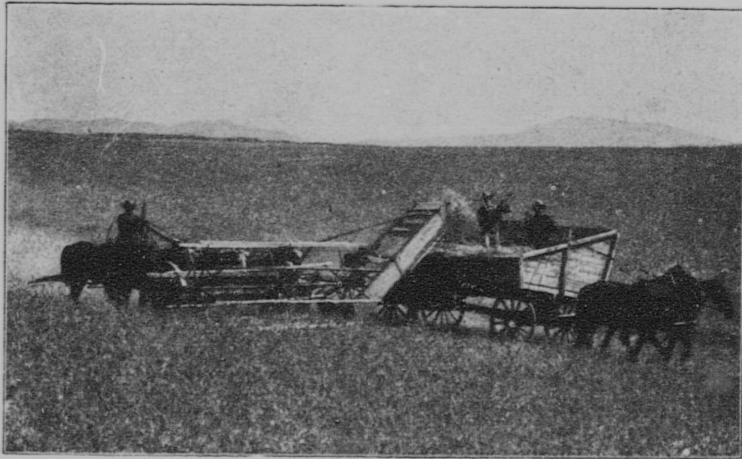


FIG. I.—HARVESTING IN UTAH.

walk it for five." The native nods with a knowing look, and a wink that says, "Well, he'll be wiser before he lives here long." Our friend starts off, and though that town does not recede, it certainly does not, after half an hour's drive, seem to get any nearer. When finally he does get to his destination he is willing to avow by all the verities that the distance is fifteen miles if it is an inch. In driving with a western friend along the foothill of the Wahsatch Mountains, I asked what might be the distance between two canyons opening into the valley before us,

able, unless one has actually seen it. It is always so different from what one expects. In a humid country one does not really know what moisture means, but on looking at an arid region he fully appreciates it at the first glance. It may seem strange, but the great forests of the Adirondacks, and the stalwart pines and firs of the Laurentian region, are the products of the rain-drop and the snowflake; lacking these mighty powers, the arborescent flora vanishes, and we have the sagebrush and the greasewood of the west;—in short, we have the arid region.

But, though the valleys and plains may be rainless, the mountains are quite the reverse. The precipitation on them is very heavy, and in winter their bald tops and rugged sides are buried deep in snow. This affords the supply of water for irrigation, the mountains being the reservoirs of the country. From this point of view, Utah is a very favored state, for its whole area is just a series of mountains and valleys, with no extended reaches of plain. It is only on account of the lack of mountains that Nevada is so largely desert. Mountain is to valley

life-stream, flowing through artery and vein and capillary, bringing with it life, and health, and growth.

The soil of the West, in common with that of all arid regions, is of wonderful fertility. So full is it, in many places, of soluble plant-food that the soil is actually barren from excessive fertility. In boring on the College farm, we have never been able to reach the bottom of the soil. It is at least three or four hundred feet deep, and the soil from the bottom of a well is as fertile as that on the surface. As soon as the sage-brush is cleared off, and the

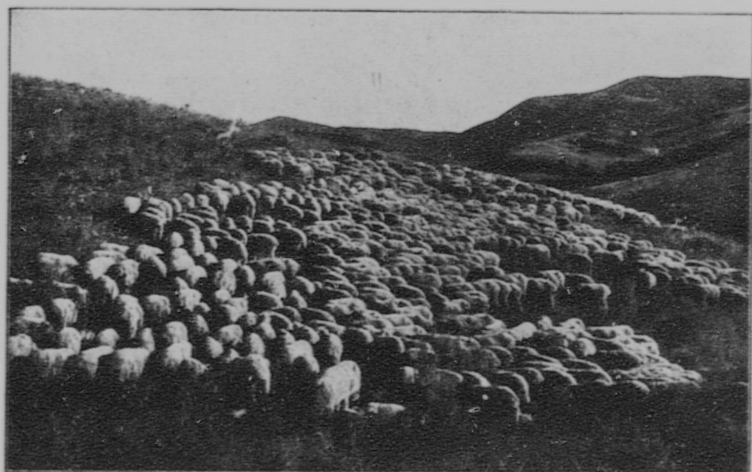


FIG. II.—“A THOUSAND FLOCKS ARE ON THE HILLS.”

“as unto the bow the cord is . . . useless each without the other.” Utah, being so blessed with mountains, is the home of American irrigation, and all the states of the arid region look to her as their leader in this line: The rivers, as they flow from the mountain-side, are tapped by canal, and sluice, and flume, till their channels run dry and the water loses itself in small, trickling rivulets over thousands of fruitful acres. Here again we have a western contradiction, a river with a source, but no outlet. But how beautiful is it to see the splendid system, like the genial

land ditched and levelled for flooding, almost perfect crops can be raised continuously. For example, it is no uncommon thing to see five heavy crops of sugar-beets, or ten good crops of wheat, raised in succession. Crop failures are practically unknown, and yields approach the maximum. The question of what can be raised from a given piece of land is practically a question of how much water is available.

Perhaps the greatest drawback to western agriculture is the accumulation of alkali in the soil. This is caused by

a maximum of evaporation and a minimum of percolation, the residue of salts in the soil becoming in time so strong

Station, assisted by the Federal Government, drained forty acres, and then by flooding the land, dissolved the salt



STATE AGRICULTURAL COLLEGE, LOGAN, UTAH.

that plants cannot live in it. In lands which get the seepage from higher levels, alkali sometimes rises, and what would formerly be worth \$200 per acre would become valueless. On the outskirts of Salt Lake City lies a level tract of 900,000 acres of as fertile land

and washed it out through the drains. In seventeen days' washing 600 tons of salt passed out of the 40 acres. Next year this land will be placed under crop, and there is every reason to believe that the land will be reclaimed. The common alkaline salts found in



FIG. III.—DISTANT VIEW OF THE STATE COLLEGE, LOGAN, UTAH.

as ever was made, but so salt is it that in many parts it is absolutely plantless. On this tract the Utah Experiment

soils are (Na_2SO_4) sodium sulphate, and (NaCl) sodium chloride. These are known as white alkalis, and are of

course soluble. Sodium carbonate, (Na_2CO_3), is known as black alkali. This salt is insoluble, but may become soluble and be turned into white alkali by treating the land with a dressing of gypsum (CaSO_4).

In this western land, not corn, nor wheat, but alfalfa, is king. Its value to the state greatly exceeds that of any other crop grown. Three or four crops are taken off in a season, the aggregate yield being often five tons and over per acre. Fig. IV. shows a field of alfalfa grown by flooding. In

farms. In this dry climate wheat-rust is almost unknown, and the bright yellow stubble offers a striking contrast to the stubbles of humid regions. Oats produce as high as 100 bushels per acre, but the grain is light, the standard bushel weighing but 32 lbs. One of the best paying crops is sugar-beets. Every farmer raises a patch of from 1-2 to 10 or 12 acres. From the factories beet trains run out within a radius of twenty miles. At present every siding may be seen crowded with loaded cars, while at the factories there

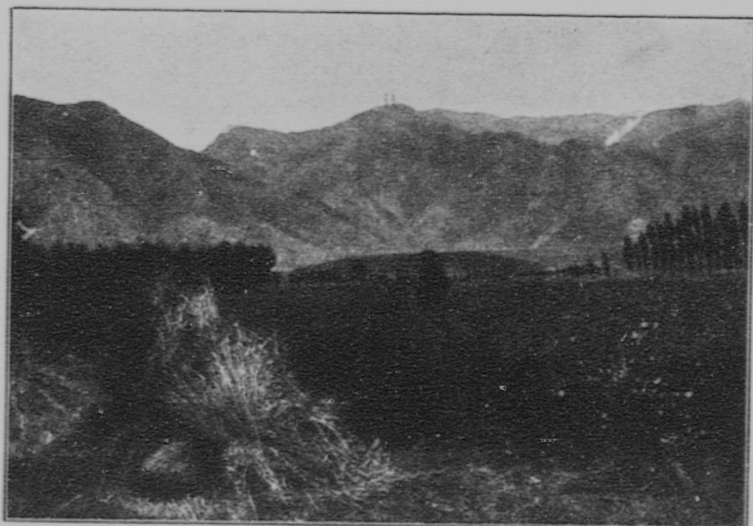


FIG. IV.—FIELD OF ALFALFA HAY.

looking over the valleys, great stacks of alfalfa can be seen everywhere. Corn cannot be grown with any success owing to the dryness of the atmosphere and the cool nights. On bench lands, which gets the seepage from the mountains, wheat is a staple crop. Wheat is the only crop grown without irrigation. This is known as dry farming, and although the land may not get a drop of water by rain or irrigation, as high as forty bushels per acre are often obtained. Fig. I. shows a herder harvesting wheat on one of these dry

are hills and mountains of beets. One factory here pumps the juice through a pipe 20 miles to the refinery. Sugar-factory stock cannot be bought, and is considered as safe as consols.

In live-stock lines, Utah stands high. Cattle and sheep ranching are primal industries. Splendid herds of Short-horns and Herefords are found in many localities. The finest herd in the state has for its range one of the islands in the Great Salt Lake. The stockers from the ranges are a fine type of fattening cattle. They are low, blocky,

and thrifty feeders, and may be bought as low as three cents per pound, live weight. Any black-noses or tawny colors are looked on with great disfavor by the ranchers. Sheep ranching is a very paying business in the mountain regions. Along every hillside may be seen their paths, marking the slopes in parallel bands. Fig. II. shows a flock of Rambouillets or French Merinos. These sheep are quite popular on account of their hardiness on range pastures, and for their fine quality of wool. Flocks vary in size from five or six hundred to two or three thousand head. Hog-raising, like corn-growing is practically nil. Large quantities of bacon are shipped here from Omaha and Chicago at prices that would delight the eastern packer. Dairying is fast becoming a prominent industry. Good butter is selling now at 30c. per lb., and all the factory product of cheese has been marketed at 15c. per lb. wholesale.

Fruit-growing here is as yet only in its infancy, though the prospects are

very promising. Certain localities have splendid orchards and vineyards, yet other localities have scarcely a trace of any kind of fruit. As the State has considerable extent from north to south, many semi-tropical fruits are grown. In addition to the range of Ontario fruits are apricots, nectarines, raisins, pomegranates, and almonds. In the southern part of the state one grower alone raised 40,000 lbs. of almonds. Fig. III. shows a distant view of garden and orchard. All fruit is, of course, very free from fungous diseases, but insects are quite troublesome. In apple orchards the codling moth reigns supreme, while for general crops the grasshopper is an annual plague.

Doubtless ere this I have wearied the patient reader, so I shall now reward him by concluding my rambling remarks on this great western land.

W. N. HUTT.

Agricultural College, Logan, Utah.
November 17th, 1902.



A TRIP FROM WINDERMERE TO MELROSE.

READERS of the REVIEW may be interested in a description of the homes and haunts of some of our celebrated British poets. The writings of Wordsworth, Southey, Coleridge, and Scott abound with gems of vivid imagery suggested by the exquisite beauties of these poet's natural surroundings; and their keen sympathy

ing some little time at each of the above-mentioned places. I shall not attempt to give the readers of this article any detailed account of the trip, but shall content myself with a brief description of what is to me the grandest scenery of the old land.

Leaving Liverpool on the afternoon of July 3rd, 1902, we arrived at Windermere on the evening of the same

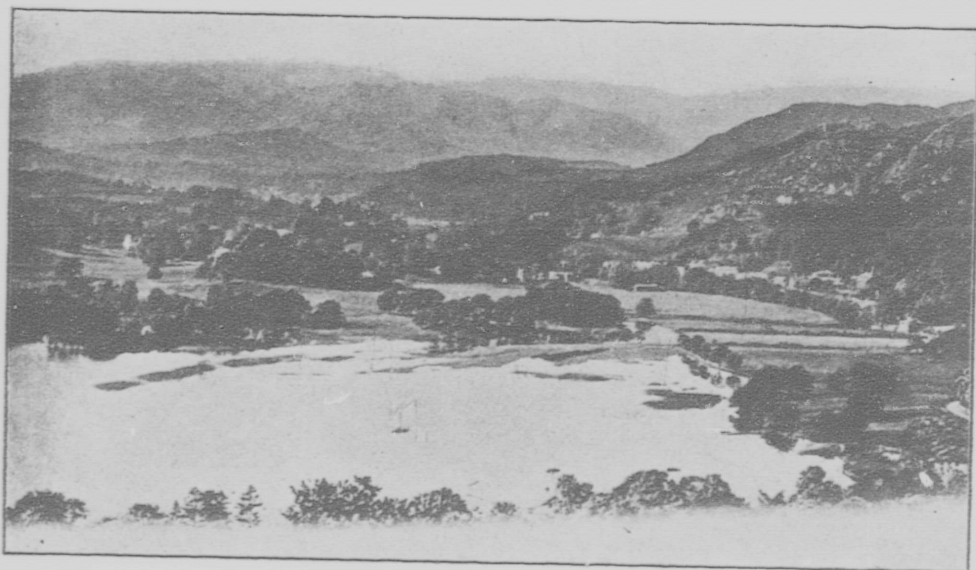


FIG. 1.—LAKE WINDERMERE.

with, and appreciation of these beauties, are evidenced by such lines as:

"To me the meanest flower that blows can give
Thoughts that do often lie too deep for ears."

Therefore, if for no other reason, the student of English literature is attracted by such names as Windermere, Rydal Water, Dove Cottage, Melrose, and Abbotsford.

During the past summer I accompanied Prof. Cumming on a tour through the lake district of England, and through parts of Scotland, spend-

ing some little time at each of the above-mentioned places, and took one of the many paths which diverge from the principal hotel of the town. After a climb of about fifteen minutes we reached a plateau called Orrest Head. The view from this point is commanding and extensive. The chief features of beauty are the winding Windermere itself, and its clusters of islets and encircling mountains. Lake Windermere is the largest lake in England. Its banks are beautifully wooded, and scattered here and

there among clumps of trees are seen numerous artistic villas, which greatly enliven the prospect (Fig. L). I shall not soon forget the beauty of the surroundings. The calm, blue water, the mountains clothed in robes of deepest green, the mist rising above the tree-tops, and the rain-drops sparkling in the setting sun, combined to form a picture of ideal grandeur.

In descending, we took another path, passing the cottage of Elleray, the former residence of Christopher North. Shading the cottage stands a majestic sycamore, of which the former owner is said to have declared: "It were easier to suppose two Shakespeare's than such another tree." Fortunate it was for us that my energetic companion persuaded me to take this walk upon the first evening of our arrival at Windermere, for, upon arising from a refreshing sleep the following morning we found the sky overcast with clouds, and rain falling steadily. Later in the day the weather brightened, and we were again permitted to look upon nature in its most charming aspect. This was not the only occasion upon which my companion's energy and desire to see everything at the earliest possible moment, secured to us views which would either have been lost entirely or seen under unfavorable conditions. The advice was once given: Never put off till to-morrow what you can do as well to-day. My advice to travellers in England and Scotland is: "Never wait till to-morrow to see what can be seen as well to-day."

After spending all the time at our disposal in this vicinity, we journeyed to Bowness, thence by steamer to Ambleside. Here we landed, and stayed some little time by the beautiful lake, loth to leave such a perfect scene. However, all things must have an end, so, facing about, we continued our journey along the coach-road leading to Keswick. The road from Ambleside

to Keswick lies in a valley, and it is one of the most scrupulously well-kept drives that I have ever seen. If the tourist is in a hurry, he may secure a seat on the top of one of the numerous coaches which, during the summer season, are driven along this road. The writer and his companion made this portion of the journey on foot, and a more delightful walk it would be difficult to imagine.

Quitting Ambleside, we passed an ivy-clad "knoll" which marks the former residence of Harriet Martineau, and a little farther on, across a small stream called the Rothay, and at the foot of Loughrigg Fell, we saw "Fox Howe," the home of Dr. Arnold. To the right from this point opens the small valley of Scandale Beck.

To reach Rydal Mount, the home of Wordsworth from 1817 till his death in 1850, we left the main road and ascended a short distance to the right. I may say that a glimpse of the house can be had from the coach, but as it is almost hidden by trees, the tourist must leave the coach and follow the road I have just indicated in order to get a good view of the home of the famous Poet of Nature. After making this ascent, however, we were forced to be satisfied with a look at the house and grounds from the road, as visitors were not admitted within the gates.

Returning to the coach-road, we continued our walk along the north bank of Rydal Water, passing Nab Cottage, in which Coleridge died in 1849, and in which Thos. De Quincey lived for a number of years. After leaving Rydal Water some distance in the rear, the road turns sharply round a wooded knoll, from which point we obtained our first view of Grasmere. Shortly before reaching Grasmere we passed Dove Cottage, the early home of Wordsworth. The cottage presents a very unpretentious appearance exter-

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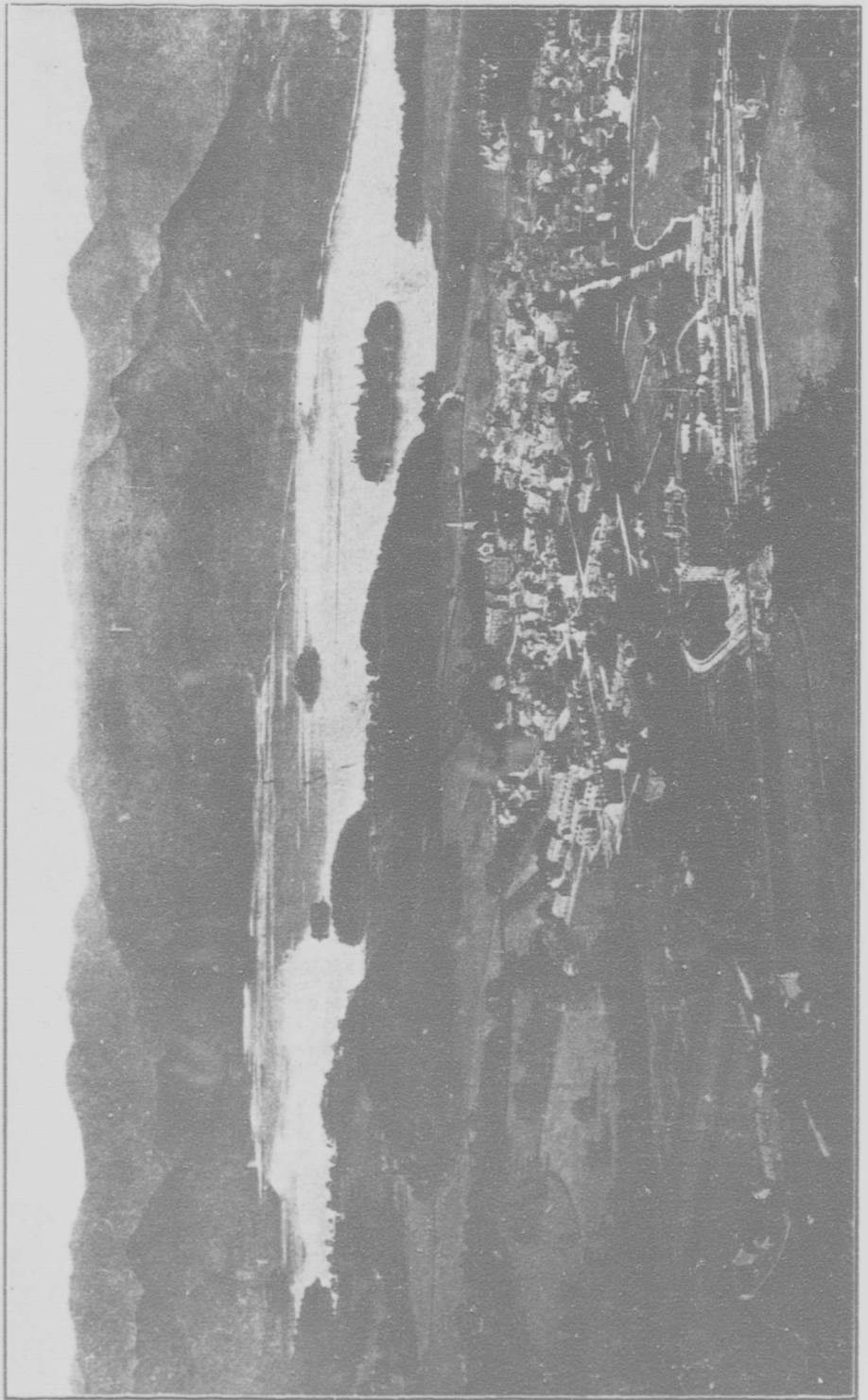


FIG. II.—KESWICK.

nally, but because of its associations with the poet, few of the tourists who frequent this district fail to pay a visit to the interior. We spent some time in the different rooms looking over old manuscripts, letters, and collections of the former occupants. The interior of the cottage is bare and cheerless. This sombre effect is deepened by the empty chairs, the rough wooden table, and the fireless hearth. Never until this visit did I comprehend the full significance of the words: "Plain living and high thinking." On the lawn behind the house may still be seen remnants of the poet's industry. Directly at the rear of the cottage is the bower which the poet constructed for his sister. This bower consists of a frail framework overhung with ivy and climbing roses. On an eminence but a few yards away may still be seen the rustic seat upon which Wordsworth spent many hours of quiet meditation. The caretaker pointed out to us several trees on the hillside which were planted by the poet's own hands.

A few minutes walk from Dove Cottage brought us to the pretty little village of Grasmere. In the churchyard are to be seen the last resting-places of Wordsworth, his sister, and his daughter Dora, and Hartley Coleridge. On leaving the village we ascended Dunmail Raise, a favorite walk of the poet's. This is our direct road to Keswick, which is about nine and a half miles farther on. All along this road are points of historic interest—none the less interesting because the stories connected with many of them are legendary, for they served to suggest some of the poet's best thoughts.

From the summit called Castle Rigg, a mile from Keswick, there is an extensive view, taking in the lakes of Derwentwater and Bassenthwaite, with the valley of Derwent between them; also including the heights of Skiddaw and the Newland Mountains. It is re-

corded of the Poet Gray that, on leaving Keswick, and turning round at this place to take a parting look at the landscape, he was so charmed that he was tempted to go back again (Fig. 2).

Keswick is on the Gretna, a mile from Derwentwater. Gretna Hall, the residence of Southey, is near the village, and he lies buried in a churchyard about three-quarters of a mile distant. There are many beautiful walks in this neighborhood; in fact, a walk in any direction is sure to amply repay the exertion. Of the longer excursions, perhaps none is more attractive than Barrowdale by the east side of Derwentwater. On the way one may visit the Falls of Lodore.

The Lake District affords an opportunity for numberless excursions, and a month could be pleasantly and profitably spent thus. The route which I have just sketched affords a glimpse of the varied attractions of the region. Amid these scenes did the lake poets live, and to their beauty is no doubt due some of the finest English poetry.

From Keswick we took train to Penrith, thence to Carlisle, a venerable city, having probably been a Roman station. Carlisle was the seat of the ancient kings of Cumbria. It was much involved in the border wars, and often besieged, until the union of England and Scotland was accomplished. The castle and cathedral are the most interesting features of the city to tourists. The castle, now used for barracks, is supposed to have been built by William Rufus. The east window of the cathedral has been called the most beautiful in the world. Its matchless tracery still retains the old glass of the time of Richard II., but the lower lights are filled with a memorial of Bishop Percy, placed there in 1861.

From Carlisle we journeyed by train to Melrose, a town prettily situated on the river Tweed. The Town Cross,

at the head of High Street, whose erection dates back to the fourteenth century, is of interest to travellers, but the great attraction of the place is the Abbey. Melrose Abbey, the finest old ruins in Scotland, is one of the most admirable works of the best period of ecclesiastical architecture. It was first built in the twelfth century by David I., and was afterwards almost wholly de-

stroyed by Edward II.; rebuilt by Robert Bruce in the fourteenth century, it was once more destroyed and rebuilt in the following century. The principal part of what now remains is the "choir," a fine example of late Gothic, with richly carved capitals, elaborate vaulting, and large and delicately traceried windows. The material is a very hard stone, and much

of the carving which ornaments the walls is as perfect as when fresh from the sculptor's hand, but many beautiful sculptures throughout the Abbey were sadly defaced at the time of the Reformation. Within the walls of the Abbey are the graves of many of the nobles of olden times. The heart of King Robert Bruce is said to have been deposited before the high altar. I

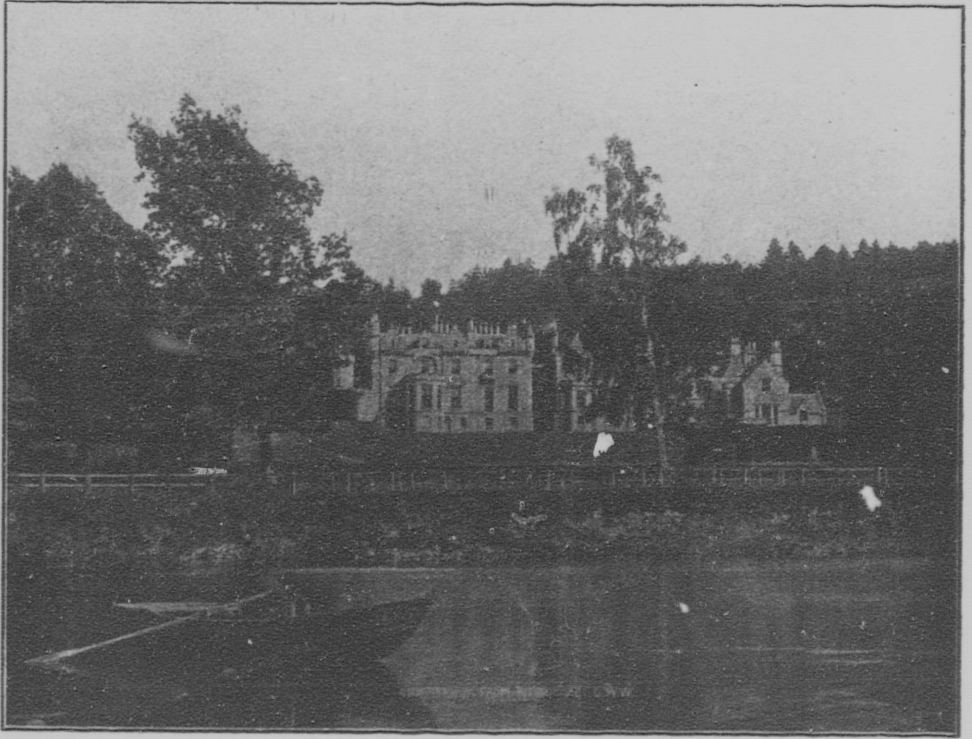


FIG. III.—ABBOTSFORD.

stroyed by Edward II.; rebuilt by Robert Bruce in the fourteenth century, it was once more destroyed and rebuilt in the following century. The principal part of what now remains is the "choir," a fine example of late Gothic, with richly carved capitals, elaborate vaulting, and large and delicately traceried windows. The material is a very hard stone, and much

have endeavored to give the reader some idea of this magnificent old ruins, but no description, not even the famous one in Scott's "Lay of the last Minstrel," can give any adequate idea of its beauty.

This article would be incomplete if it were closed without saying a few words about Abbotsford, the picturesque home of Sir Walter Scott. It

lies on the right bank of the Tweed, about two miles from Melrose. The mansion was erected by Scott, and the trees which obscure the view from the road were planted at his order. An excellent view of the house can be had from the river (Fig. III.). The rooms to which visitors are admitted include the great novelist's study, the library, the drawingroom, the armory, and the entrance hall. These contain

numerous personal relics of Scott, and many historical curiosities.

The neighborhood of Melrose and Abbotsford abounds in places associated with events in Scottish history, and it was from these places that Scott drew much of his material and inspiration. It is with these places, also, that the interested reader of Scott should become acquainted if he would rightly appreciate the works of this great poet-novelist.

W. P. GAMBLE.

AGRICULTURE AS AN OCCUPATION.

PERHAPS one of the most difficult problems with which a young man finds himself confronted is the choice of an occupation. Now, while I deplore as much as any one the discontent with country life, which is so prevalent among farmers' sons, yet I think we hear a great deal of nonsense in these days about how to keep the boys on the farm. I contend that it would be a serious thing for the commonwealth, and particularly for the towns and cities, were every farmer's son to remain on the farm. Any careful observer has noticed that the men that are making their mark in the world, in every department of life, in the arts and sciences, in the trades and professions, in mercantile pursuits, or as statesmen, are in nine cases out of ten the product of the farm. Again, how many do we find scattered up and down our concessions, who are merely eking out a miserable existence on the farm; men that are wretched failures as farmers; and, because their hearts are not in their work, can never be anything else, who by reason of their talents might have had a brilliant career in the practice of law or medicine—a good lawyer or a good doctor spoiled to make a third-rate farmer.

So that, from any standpoint we choose to view the matter, we see it to be a grave mistake to urge that every farmer's son should stay on the farm.

Yet the farm has for me many attractions. It seems to me to be the business best suited to call out and develop all the highest faculties of a man's nature, moral, mental, and physical. Farmers' sons are not exposed to the same temptations that assail the young men in our larger centres of population. They have not the same inducement to waste their leisure time and surplus energy in the pursuit of those doubtful forms of entertainment which, to say the best for them, yield but a very poor return for the expenditure. Further, the farmer is, from the very character of his calling, brought into close contact with nature. The necessity is becoming more and more pressing every year for a closer observation, and a more intelligent study of nature, and of natural laws. As a consequence of this, he is brought into closer touch with that Infinite Power which is behind all nature. So close and so intimate is this connection that it may be said to be in very truth a partnership. Every day goes up that human cry, "Give us this day our daily bread," and the farmer is the channel through

which that prayer is being daily answered.

I have said that agriculture is conducive to the development of the mental faculties. I believe that I am well within the mark when I say that in no other business or profession is there a wider scope for the exercise of human intelligence, or a greater necessity for a broad and liberal education, than in that of agriculture. We speak of our learned men, and we say of one that he is a botanist; by which we mean that he has made a careful study of the characteristics of plants, and of the principles that govern their growth and

scope for the exercise, and consequent development, of the mental faculties.

Again, I have said that agriculture contributes to the best interests of the physical side of a man's nature. I can conceive of no more healthful occupation in which any man can engage than the active outdoor exercise of the farm, breathing the pure and invigorating country air, and living on the fresh, wholesome, unadulterated food that finds a place on the farmer's table.

The power and influence of the nation depends primarily upon her commerce. I aver, therefore, without fear of successful contradiction, that agri-



DAIRY HERD.

development. We speak of another, and we call him a geologist; that is to say, he has studied the structure of the earth's crust, and has made himself familiar with the different classes of soils, and with their various properties and peculiarities. We speak of a third, and we call him a chemist; of a fourth, and we call him an entomologist, and so on, through a long list of sciences, any one of which is sufficient to engage the talents of our ablest men for a lifetime. What, then, shall we say of a business with which each and every one of these sciences is so intimately associated? Surely it affords ample

culture is one of the most patriotic occupations in which any man can engage. Agriculture lies at the very foundation of all commercial activity. Is the farmer prosperous? So is the manufacturer, the merchant, and the mechanic. Is the farmer in depressed circumstances? So in turn are these. I contend, therefore, that the man who by the introduction of improved methods cause two blades of grass, or two ears of corn, to grow where but one grew before, is a patriot in the truest and best sense of the term, and does infinitely more for his country than many of our blatant politicians.

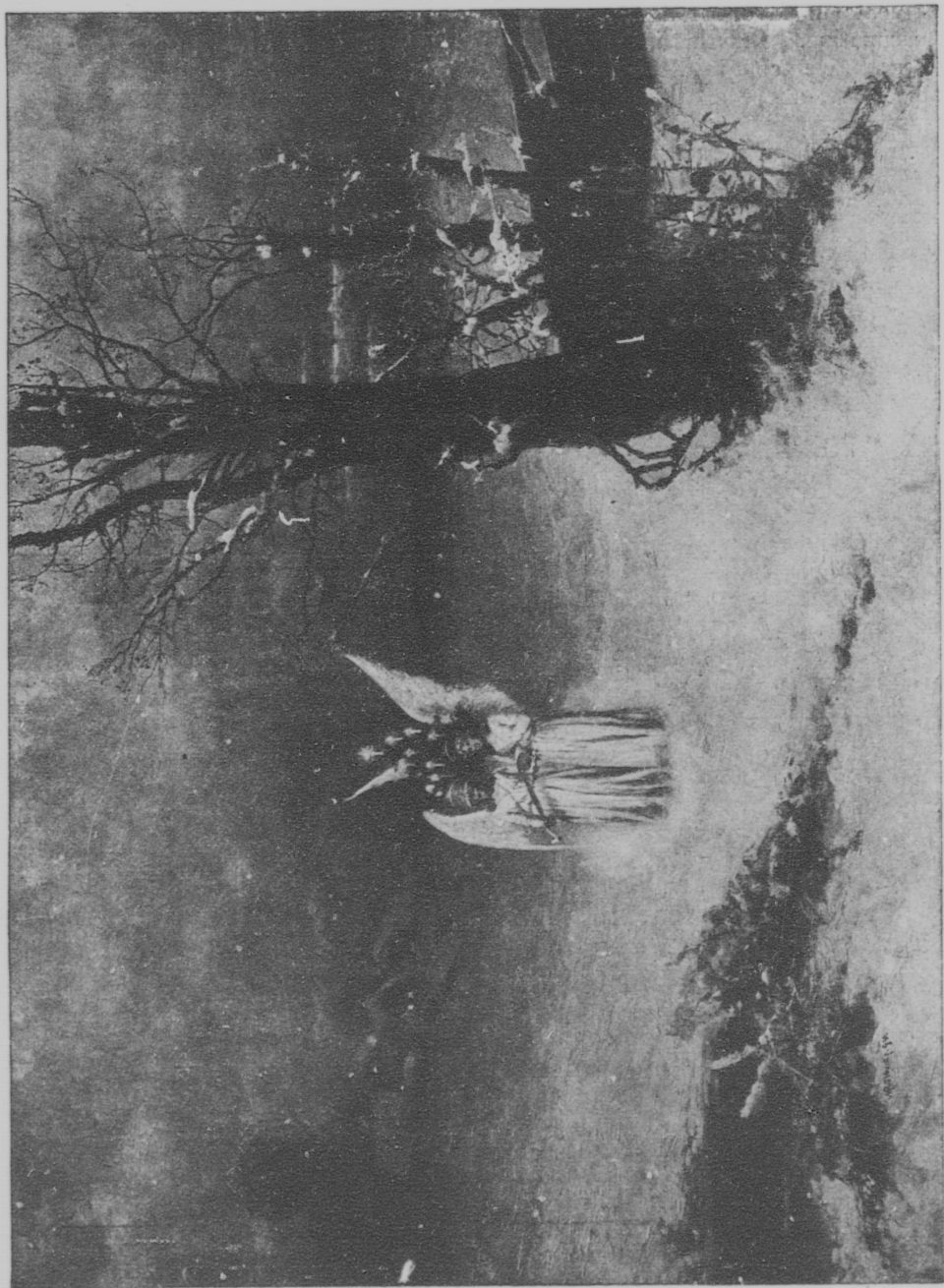
These may sound like sentimental arguments in favor of agriculture as an occupation. But this is a practical age, and we congratulate ourselves that we are, above all things else, an intensely practical people. For this reason I wish to mention a practical ground on which I have based my preference. It is this: I believe it to be the safest and surest, from a financial point of view. Statistics go to show that about ninety per cent. of the young men engaging in mercantile pursuits fail, seven or eight make a fair living, while two or three get rich. Now, I think these figures might be safely reversed when applied to agriculture. I believe that the ninety succeed on the farm, while perhaps the ten fail. I grant you that the profits from the farm come in slowly, and the balance in the bank does not accumulate very fast. Few farmers, if any, ever become what may be called in these days of immense fortunes, rich; but the profits are clean; they come from successive contributions to the world's wealth, and furthermore they are reasonably sure. Any energetic man, possessed of good, sound judgment and a thorough knowledge of the business, can obtain not only a good living from the farm, but also a fair competence. We too often forget to credit the farm with a

home and a living, that in town would represent a very considerable cash outlay. Those who have taken the trouble to figure it up, will agree with me when I say that a man cannot live in town in as good a house, set as good a table, drive a horse and rig when he wants it, and enjoy the same comforts of life generally, as the average every-day farmer on an income of less than seven or eight hundred dollars a year; while there are hundreds of farm homes in almost every county in the Province, that cannot be duplicated in any good sized town for a less annual expenditure than from twelve to fifteen hundred dollars. We should not forget, then, when balancing up our accounts at the close of the year, to credit the farm with a home and a living equal at least to that enjoyed by the business or professional man who is earning an average income.

But though for these and other reasons I have pinned my faith to agriculture, it does not necessarily follow that every other man should do the same. I believe that every man is born into the world with tastes and talents that fit him for some one particular calling, and that unless he gets into that groove for which he is especially fitted the odds are very heavy against his success.

A. P. KETCHEN.





CHRISTMAS EVE IN THE BLACK FOREST.

CANADIAN BEEF IN THE ENGLISH MARKET.

IN our last issue this department was devoted to a consideration of Canadian bacon in the English market and, there it was pointed out that Canada has certainly gained a high position in that market, but is yet a long way from fully satisfying its demands, and that, if she would maintain, let alone improve, her standing so far as this product is concerned, she must send a more uniformly high class of bacon over to England. Even at the expense of being considered chronically critical, we would like to continue our comments upon Canadian produce, and to record in this short article some of our observations upon Canadian beef in the English market.

To no place could we go for more direct and accurate information than to the central meat market, Smithfield, London, and therefore at a very early hour in the morning of an August day, we found our way to that market more famed for high-class beef than any other in the world. When we say early, we really mean it, for by 7 or 8 o'clock a.m., the business in the market is practically over, and the place which, from 4 to 6 a.m., is a scene of rush and activity, is deserted, and the meat transferred to the stalls of the retail merchants in various parts of the city of London. Having met, at the Highland Agricultural show, Wm. Cooper, an Aberdeenshire man, and one of the best-known merchants in Smithfield, we soon looked him up at stall 26, and under his guidance explored the immense area of this market. What an enormous appetite for meat London must have, we could not but think, as we walked through row after row of stalls and saw their hundreds of carcasses of beef and mutton to be sold by the large number of mer-

chants whose business calls them to duty while the rest of London sleeps.

But it was not our purpose, in going to Smithfield, merely to muse and see the vastness of this market, but rather to find out all we could about Canadian beef, and therefore we were not very long in the company of Mr. Cooper before we asked him, "What do you think of our Canadian beef?" The answer, a not very reassuring one, was: "Well, I think a great deal of Canada, and would like to favor that country as far as possible, but when it comes down to business, I have to give preference to English, and Scotch, and even United States beef, before Canadian. Taking it on the whole, while there are exceptions, you Canadians send over a class of beef that is not of the first quality, and that is not sufficiently well finished to suit the demands of our first-class customers." Other men, whom we met, corroborated these statements, so that we could not but see that Canada is, as yet, a long way from perfection in this matter, and can well afford to do everything in her power to foster the stock-breeder's interests as well as to stimulate our feeders of cattle, by object lessons at fairs and every other means, to improve their fat cattle. We confess to have felt a little crestfallen as we heard these facts stated by men who knew whereof they spoke, especially so when they told us of the undeniable superiority of the beef from the United States over ours, but after carefully examining some of the carcasses of beef suited to the best trade in that market—much fatter, by the by, than those that were awarded the prizes at the fat stock show in Guelph a year ago, we left determined that we at least would do all in our power to improve the status of the live stock industry in Canada,

in order that the time may soon come when Canada may be depended on to produce the very best beef in the world.

And why not? Have we not good breeders of beef-cattle in this country? Yes, as good as there are in the world, but not enough in proportion to our area, and moreover, too much of our best stock has been and is leaving our country at the bidding of United States money, and has very materially helped to build up for the people of that country a reputation superior to ours for beef products. Still, the interest in better stock is rapidly developing, and the number of men who are engaged in breeding pure-bred cattle is increasing every year. And we can only hope that not only more men will engage in this line, but a relatively much greater proportion of capital will be devoted to it, so that we may be able to retain within our borders our very best cattle, and thus improve the quality of all our beef products.

One other means, it appears to the writer of this article, would greatly improve the quality and finish of our beef cattle and ensure for us a much better standing in the beef markets of the world, and that is the establishment of stock-yards, at one or two centres, of the same extensive nature as those

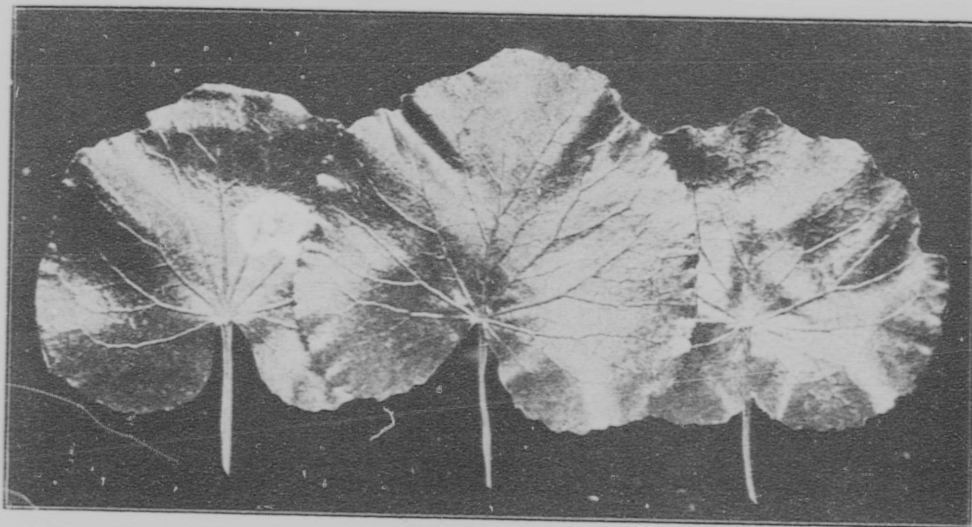
that are now established in Chicago, Kansas City, Omaha, and other centres of the United States. The value of these, in addition to the fact that they would concentrate the beef trade, would be, as is the case elsewhere, that thorough, discriminating buyers would appraise the cattle that are shipped, and pay for them exactly in proportion to their quality and finish. True, our present buyers do discriminate to a certain extent along those lines, but not sufficiently to appeal strongly to our feeders. One has only, in order to appreciate the contrast, to visit some of the stock-feeders near Chicago, and see what a premium they put upon superior quality and finish. They have been educated to it through their pockets, and our stock-feeders can be educated by the very same means. In the light of these facts we will watch with rare interest the progress of the union stock yards that have been established near the city of Toronto, and hope that all the interest that is at present being taken in animal husbandry will culminate in such an improvement in our beef cattle generally that Canada will no longer have to take a back place in any of the beef markets of the world.

M. CUMMING.



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GALAX LEAVES.

CHRISTMAS AND CHRISTMAS GREENS.

"Lo, now is come our joyful'st feast!
Let every man be jolly.
Each room with ivy leaves is drest,
And every post with holly."



WHEN we turn over the historic page and trace the origin and growth of Christmas customs, there is nothing that exercises a more charming spell over the imagination than the time-honored tales of these customs in "ye olden time." They carry us back to a time when Christmas was not only a season of gift-making and family gatherings, but also a season of "quaint humors, burlesque pageants, and complete abandonment to mirth and good-fellowship"; to an age when men enjoyed life roughly, but heartily and earnestly, when Society lost itself in homebred feelings and honest fireside delights; and to a time when all classes observed more strictly the religious and social rites of this the grandest festival in all the year.

The traditional customs of the Christmas of long ago awaken within us most profound and heartfelt admiration for the manner and sentiment in

which they were observed. Every thing conspired to produce the kindest feelings of merriment and good cheer. The Yule log, with its many superstitions, glowed and blazed to warm the hearts of the merry-makers; the sound of minstrelsy and the singing of Christmas carols added their charm of melody to the occasion; and the profuse decorations of Christmas greens—the holly, the laurel, and the mistletoe—contributed more than all else to make Christmas what it surely was then, and what it is to-day in a somewhat modern sense, a merry Christmas.

Time and modern fashion have gradually worn away many of these ancient customs. The old genial spirit of hospitality has been supplanted by the more enlightened and elegant tone of modern refinement. The beautifully simple, but earnest, melody of the old-time carol has been displaced by the more stirring effect of the modern anthem. The honest greetings and enjoyments of the past have given way to more trivial and fleeting pleasures. Truly we may say that the Christmas of to-day is far removed from the

Christmas of long ago; yet despite the havoc wrought by time, this season is now, as then, the most fondly cherished of all the year.

Christmas to-day, although lacking many of its ancient honors and charming peculiarities, is still a period of delightful recollections and fond associations. To the wanderer from home, there is no time in all the year in which he appreciates more keenly the true worth and meaning of the word "home," and the thought makes him feel a stranger in a strange land. To the wanderer returned home, there is no occasion so opportune to insure him a warm welcome and joyous return. To the happy fortunates now at home, there is no season more fitting to strengthen kindred friendships and renew kindred sympathies. In sentiment and charm Christmas remains the same, notwithstanding the work of Father Time, in altering the customs of antiquity.

The very season of the year influences our appreciation of Christmas. At other times, we may enjoy the beauties of living nature, but at this time, when all around is barren and bleak, or lying silently hidden 'neath a mantle of crystal snow, we are bound to appreciate most sensibly this joyous season of good cheer. Although the world without may be stripped of its verdure, yet within the home nature may be, and often is, reproduced in a wealth of Christmas green.

From the evergreen memories of Christmas recollections, let us direct our thoughts to the ever-green realities of Christmas decorations. The decorative effect of evergreens about the house is probably the most cherished remembrance of all. Many and varied are the kinds of evergreens used, as is also the uses to which they are put.

Ilex, or holly, is the most important decorative evergreen used in America.

There are many species and varieties comprising both deciduous and evergreen shrubs with many colors of fruit. The common American holly is found in dry and barren fields, from Maine to Florida. It differs from the English holly in many respects. It is hardier, but less handsome; leaves are more oval and not so waved and crinkled; fruit, a dull, deep scarlet, and usually solitary, while in the Old Country holly the berries are bright and shiny, and occur in clusters. Occasionally English holly is imported into Canada, but seldom with commercial satisfaction. In this country we have no true native holly, but a closely allied species is the winterberry, found in our swamps and low grounds.

Lycopodium (also known as ground pine, club moss, etc.), is one of the oldest and most common of our decorative materials. The best of this is found in moist woods and rough, spongy swamps. In drier situations it is also found, but of a lighter and yellowish color. Selaginella is sometimes mistaken for lycopodium, but, as the latter is identified by the coniferous habit and the single form of its capsules, they can readily be distinguished.

The mistletoe as a Christmas decoration seems to be indispensable. In the past it has been associated with many superstitions and highly extolled for its medicinal purposes. It grows as a parasite on trees, preferably the apple. The American mistletoe is found from New Jersey to Florida, and is shipped to Northern parts during the holiday season. The eastern cities of Canada and the United States use small quantities of European mistletoe, brought over from England and France. It is very liable to injury from frost, but being more showy, and having larger berries than the American sort, it has greater decorative value.

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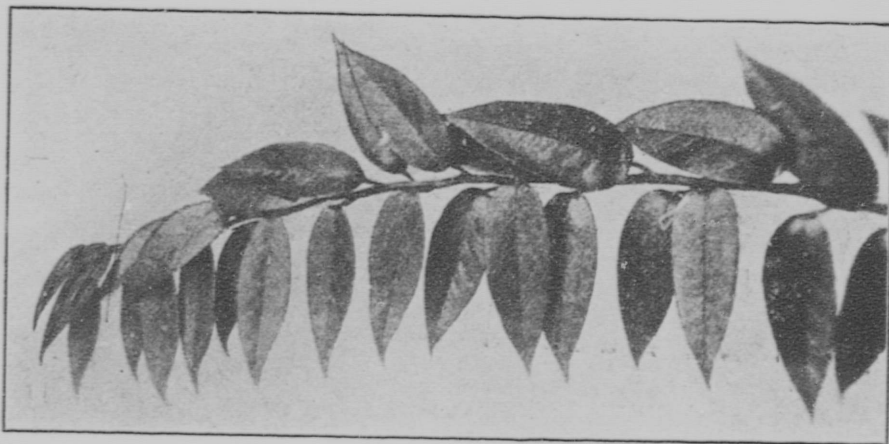
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coming rapidly into favor as an artistic bit of greenery. For grace and elegance it is unsurpassed. For making up designs, sprays of leucothoe are often used in connection with galax leaves. Its native haunts are the moist ravines of the Southern States, but some of the hardier species are grown in Massachusetts and Western New York.

The pretty little galax, or colt's foot, with its rich-hued leaves, tinged with shades of red and bronze, is another recent decorative introduction. Galax leaves have largely displaced the English ivy, as it furnishes long, wiry

bay tree, of the florists is *Laurus nobilis*. "The sweet bay tree is the laurel of the poets, the laurel sacred to Apollo, the laurel that comes with its story from the streams of Greece." Laurel leaves are used in some countries for cookery and making confections, because of their aromatic flavor. For purposes of adornment, it has had, and still has a prominent place. In America, the kalmias are known as laurels, and their glossy leaves are much sought for at Christmas. Most of our laurel comes from Maryland and Virginia, but it also is found in the eastern provinces of Canada.



A SPRAY OF LEUCOTHOË.

stems, is less expensive, and is easier handled and kept. They make beautiful wreaths, crosses, and other designs for holiday purposes, and in spring they are used for bunching violets and mayflowers. They are gathered in the mountains, from North Carolina to Georgia, and are shipped in large quantities to the cities and towns of the North.

The old-fashioned Christmas greens, ivy, laurel, and rosemary, are now but little used. Under the name laurel are commonly included many broad-leaved evergreens, but the true laurel, or sweet

The English ivy is cultivated in some parts of America, even in the north, when protected in winter, but its part in the role of decorating is a small one. Such vivid contrasts of color in foliage and such a wealth of associations is possessed by no other plant; the ivy, "to which the ghost of all the storied past alone tells its tale of departed greatness; the confidant of old ruined castles and abbeys; the bosom companion of solitude itself. True to these instincts, the ivy does not seem to be naturalized so easily in America as most other foreign vines. We are

yet too young—this country of a great future and a little past." For covering walls in greenhouses, for screens in drawing-rooms, and for hanging baskets, it is a valuable plant. The ivy that is most used in America for decorating is a shrub of the Southern States.

The rosemary of old England, so largely used at one time in the appointment of the Christmas feast, grows wild in some parts of that country, but is native, more particularly, to the Mediterranean region, especially the chalk hills of Southern France. With it are also connected many supersti-

requires a little attention to prevent wild smilax that comes from Alabama injury from frost. When used for decorating, its luxurious festoons are charmingly free and striking. Besides this and some of those mentioned above the South contributes palm leaves, dagger ferns, magnolia branches, and Florida moss, all of which have individual characteristics, peculiar in themselves, which are effective for special purposes.

The North also contributes its share of Christmas greens in hardy ferns, needle pines, hemlock clippings, and



AMERICAN HOLLY.

tions "The rosemary, which was anciently thought to strengthen the memory, was not only carried at funerals, but also worn at weddings." It is a hardy evergreen shrub with aromatic leaves, which are sometimes used for seasoning. The wild rosemary of Canada, a species of Labrador tea, and the sand-hill rosemary of the south, are quite distinct from the true rosemary, and are seldom, if ever, used as decorations.

Another highly-prized green is the and Georgia. Like the mistletoe, it

many others. Clippings of cedar, hemlock, and yew, for roping and massing in large churches and halls, are used with effect and economy. Our common, hardy ferns gathered from the woods give strength, when well arranged, to any plan of Christmas adornment. For the sake of contrast and variety, branches from some of our hardy decorative shrubs may be used. For this purpose, the bright scarlet berries of the burning-bush are particularly desirable.

One of the most appreciated of all

the Christmas greens is the Christmas tree, as it plays the most conspicuous part in the all-pervading fun and frolic of the occasion. In its associations and traditions are centred the cheery and buoyant side of the festive season. Prominent among these is that ever-youthful antiquity, Santa Claus. The tales of that historic individual, coming from the snowy woods, bearing upon his genial shoulders the tree, laden with good things and glittering with lanterns, touches in the hearts of the children a note of Christmas sentiment that will never die out so long as this great annual festival is observed.

We are indebted to the early German settlers of Pennsylvania for introducing the gift-tree into America. They kept it for years before it was adopted by the Puritans, who had previously regarded it as a remnant of evil superstition. Time has gradually widened the gulf between those days and to-day, when it is estimated that in the eastern cities alone there is annually offered for sale about 500,000 trees.

One of the favorite Christmas trees

is the balsam fir, although certain types of spruce and other conifers are also in demand. The fir is favored for its pyramidal shape. When young, it is very striking and very pretty, with its branches regularly whorled and leaves dark green and whitened on the under side.

"What deep breaths from the outdoor world comes into our homes with these Christmas greens. They are resinous with the odor of great fir forests where snowflakes are flying; spicy with orchid incense from tropical jungles where palms and smilax flourish; vibrant, perhaps, with mocking-bird songs in swamps where the mistletoe grows."

Despite the modern preference for staid reticence and real life, the tales of revels and junketings, coaches and Yule logs of the past, and the Christmas gaiety, brightness, and innocent merriment of the present, find an echo in the hearts of all men that will resound throughout the avenues of future years.

A. B. C.



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DECEMBER, 1902.

EDITORIAL.



THE joyous festive season that proclaims "peace on earth, good-will to men," is fast approaching. Already it is beginning to enfold us in its magic spell, making the heart grow lighter and the tired body forget that it has gone through another year of labor. With the close of the examinations the students will scatter far and wide to spend the holidays with friends at home, returning with the New Year to begin again the work of preparation for a useful career.

Even during our holidays we should devote a little time to serious thought. Let us ask ourselves a few questions: Have we made the best use of our time during the past year? Have we done all we could to ennoble ourselves and fellow-men? Are we determined to do, if possible, still greater and better things during the coming year? Let us, each one, look back over the past to find wherein we have made mistakes; and, knowing our mistakes, profit by them in working out future success. Thoughts for the future will add to, rather than detract from, the pleasures of the holiday season. There is no greater reward for work than the satisfaction of knowing that we have done

our best, and in doing our best, have succeeded. Good resolutions, faithfully kept, will make the coming year full of good things for us.

"Rarely has a people enjoyed greater prosperity than we are now enjoying," so says President Roosevelt, in his Thanksgiving proclamation to the American people. We can apply the same statement to the Canadian people, for rarely have we seen a more prosperous year. All branches of enterprise are booming, cities and towns are growing rapidly, farmers are looking backward over a bountiful harvest, and the nation is at peace. Manufacturers and farmers may together pour out a spirit of thanksgiving, and challenge the oncoming blasts of winter, protected by the armor of plenty.

The tiller of the soil has truly great cause to be happy. Although the spring season was unusually wet, still it was followed by a summer very favorable as a growing period. Consequently the industrious and wide-awake farmer has reaped such a harvest as has not been known for years. His barns are full to overflowing, his cattle and horses are sleek and con-

tented, his fall-work has progressed favorably, and his bank account shows a good balance on the right side. What better contentment could a person wish than the lot of a farmer who has just passed through such a successful season. The one who has been dreaming by the roadside, and allowing his opportunity to pass, should be pitied. To such a man the festivities of Christmas will appear a hollow and unmeaning ceremony, not even brightening up or breaking the routine and drudgery of his work. But surely there can be but few persons in this country to welcome Christmas in such a manner this year. We hope that there is an overwhelming majority of those who have taken advantage of a favorable season to store away encouragement for the future. Such a people will be happy, and will look forward to a cheerful Christmas, to the time when they will proclaim with heartfelt fervor, "Peace on earth and good will toward men."

The time is approaching when everyone will be giving some thought to buying Xmas presents for friends. When at a loss to decide what present to select for a brother or a male friend, let me suggest that you look up some book on Nature. Although such a book may appear to be out of season, I do not think that it would be out of place. It certainly should gain favor with the recipient, considering the increase in production and popularity of Nature-books. Scarcely twenty-five years ago John Burroughs stood almost alone as a writer of Nature-books, bravely and firmly adhering to that one class of books, and determined to write no other. To-day the cry is for books on Nature; they are taking a place with books of fiction, because the people are becoming more interested in the silent things in Nature, which are being displayed to them every day in their life. So great is the present

demand for books on Nature that a school of writers has sprung up, who write on little else. A few of the greatest of these, with their productions, might be noted. The works of Ernest Thompson-Seton are probably the most popular. His "Wild Animals I have Known," "The Trail of the Sand-Hill Stag," and "Lives of the Hunted," almost rival in sales some of the popular novels of the day. F. Schuyler Mathews has written several interesting books on familiar flowers, trees, and insects. Charles G. D. Roberts became famous by writing his "Kindred of the Wild," and Mrs. Parsons and Mrs. Wright have written many good Nature-books. Mention should also be made of J. P. Mowbray's "A Journey to Nature," and John Henry Comstock's "Insect Life." Besides these, there are many more deserving of a place in the library of every student of Nature.

We have much pleasure in presenting an article on the college, written by J. B. Reynolds, B.A., Professor of Physics and English Literature. The amazing growth of our College during the last few years leads us to fully appreciate the privilege of being, or having been, students of such a progressive institution.

All those interested in the future greatness of Canada should read carefully and think deeply upon the article so kindly contributed by Dr. B. E. Fernow, Director of Forestry, Ithaca, N.Y. Dr. Fernow deals in an able manner with the importance of preserving and renewing our wealth of forest lands.

Readers of the November issue of the REVIEW so much enjoyed the article contributed by Wm. N. Hutt, B.S.A., Logan, Utah, that we exerted

our persuasive powers to induce him to send an article for the Christmas number. Prof. Hutt is very busy with his college duties, and it was only by a great personal sacrifice that he sent us the instructive article on agricultural conditions and methods in Utah. We trust the fertile land of the West will not cause too great an exodus from our own province.

Lovers of English poetry will take a deeper meaning from the poems of some of their favorite authors, after reading the descriptive article by W. P. Gamble, B.S.A., Associate Professor of Chemistry. We regret that limited space has made it necessary for Prof. Gamble to very much curtail his article. We hope to secure something further along this line for a later issue.

PERSONALS.

Geo. McCallum, '76, is farming at Deford, Mich.

John R. Job, '80, is farming and gardening at Freeman, Ont.

John H. Cook, '92, is farming at Milberta, Temiscaming, Ont.

Fred. Mulholland, '88, farms at Bedford Park, York Co., Ont.

S. P. Brown, '86, is running a cheese and butter factory at Birnam, Ont.

D. A. Robertson, '96, causes the earth to yield fruitfully near Dunsford, Ont.

Robt. A. Ramsay, '80, is Government Stock Inspector at Soda Springs, Idaho.

Geo. C. Watson, '88, is a prosperous agriculturist at Isherwood, Rainy River, Ont.

Herbert Green, '81, is a successful physician. His address is 60 Carlton Street, Toronto.

Geo. B. Tupper, '96, makes a specialty of stock-raising at his home near Tilsonburg, Ont.

J. W. Anderson, B.S.A., '96, Supt. Western Ontario for the U. S. Separator Co., called at the College on the 14th of November.

E. A. Rutherford, '98, writes from Colborne, Ont.: "I intend to live and die on the farm."

John Wheatley, '92, one of our gold medallists, is at Moore, Ont. Dairy farming is his specialty.

J. P. Thomson, '88, after practising as a Veterinarian for ten years, is now farming at Uptergrove, Ont.

J. Allison, '97, we are informed, contemplates entering the ministry. O, Mighty Munchausen, we wish thee well.

Herbert J. Robinson, '93, was killed in the late war at Lindley, S.A. He was a trooper in the 45th Imperial Yeomanry.

A. R. Douglas, '97, is practising Veterinary Science at 37 Ste. Famille Street, Montreal. "Molecule" makes a specialty of canine diseases.

Stephen H. Pugh, '85, is farming at Milverton, Ont. He is also Sec.-Treas. of the North Perth Farmers' Institute.

E. H. L. Selwyn, '95, until lately at Trinity Vicarage, Hampstead, Eng., sailed for India on Nov. 21st. A chaplaincy at Sukkur, Lindh, in that country, awaits him.

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Dr. Charlton is an O. A. C. man of '79. The REVIEW congratulates him on his success, though divorced from agriculture.

E. W. Burch, '84, is one of the Superintendents of the Empire Loan and Savings Co. He is to be found at 185 First Avenue, Toronto.

G. C. Creelman, Supt. Farmers' Institutes, and B. E. Patterson, both of our first graduating class, spent the 16th November around the College.

John Howson, '97, tills the soil at Cavan, Durham Co., Ont. He says. "I am getting along O. K., and never regret the time spent at the O. A. C."

Walter J. Pady, '85, who went to Forbes Woolen Mills at Hespeler after leaving here, then through Woodstock College and McMaster, is now preaching at Toronto Junction.

We regret to announce the recent death of Henry S. Joyce, '78, in the West. After his course in the College Mr. Joyce spent some time on the Horticultural Department, and was held in esteem by all who came in contact with him.

Taken from a Montreal paper:— "Scarlet fever is the latest to be added to the list of diseases which modern science is gradually and surely teaching mankind how to overcome. The credit of the discovery, in this instance, is largely due to Dr. George A. Charlton, who has just been appointed Rockefeller Fellow of Pathology in the Faculty of McGill University.

The following, clipped from an agricultural paper in the East, will no doubt interest many, the three whose names are mentioned being graduates of our Dairy School:

"It has been announced by the Boer farm delegates that the report of having made an effort to secure the ser-

vices of Mr. Harvey Mitchell for developing the South African dairy work is quite true, and they state further that they mean to have him. We congratulate them on the wisdom of their choice. As the official supervisor of District No. 1, New Brunswick, Mr. Mitchell's has been the guiding hand in the development of our cheese and butter industry. The services rendered by him in conjunction with Messrs. Tilley and Daigle will be more appreciated when their plans are carried to completion, high as they now stand. We have all along feared that the growth of our provincial reputation as a dairy centre would mean that the retention of their services would be a difficult matter. It is needless to say that a strong effort should be made to keep Mr. Mitchell here. We believe it will be made, and as we understand that he has yet given no reply to the South African offer, we trust that his excellent practical training and genial personality will not be lost to us.

EXCHANGES.

The *Students' Herald*, Manhattan, Kansas, commenting on the view of the strawberry field given in our October number, says: "Most people would more naturally expect to see a field of ice and snow."

The November number of *Acta Victoriana* contains several very interesting articles, one of which deals with the Education Bill, a live topic in England at the present time. We commend it to the notice of our readers.

We regret that in the two previous issues of this paper we were unable, through lack of space, to acknowledge the receipt of our various exchanges. These have not failed to arrive, and we have gained much by the perusal of them.

Students wishing to see the exchanges may do so by applying for them at the Library.

We cordially invite the *Herald* scribe of the Local Gossip column to visit Ontario next summer. Then he will be in a position to judge for himself of our climatic conditions, and to ascertain whether or no it would be possible for him to cut any ice up here at that season.

The *M. A. C. Record* comes to hand promptly each week. We suggest to


its editors that they transform it into a monthly paper and endeavor, if such be at all possible, occasionally to insert news or articles other than of a strictly local nature. Then would its value as an exchange be greatly enhanced.

Other exchanges received are: Dalhousie Gazette, Industrial Collegian, Montana Exponent, Ottawa University Review, Trinity Review, Rocky Mountain Collegian, McMaster Monthly, Jayhawker, The Argosy, the Stillwater College Paper, Vox Wesleyana, Acadia Athaeneum, Canadian Horticulturist.

ATHLETICS.

Mulock Cup Series.

O. A. C. vs. St. Michael's.

N Tuesday afternoon, Nov. 18th, St. Michael's College defeated the Ontario Agricultural College team by a score of 6 to 2. The game was played on the Toronto University Athletic field. It was far from being an ideal day for football, as it had been raining all forenoon, and the grounds were very slippery. The contest was the most stubborn which has been fought in the series this year, and the winner could not be determined until the whistle had blown for time. With a little more judgment at critical times O. A. C. would have won. Both teams played a clean, gentlemanly game, and there was not the slightest occasion to even warn a player. The Guelph boys failed to kick often enough, and tried to buck the line too much. They lost the ball twice when scores might have resulted from punting.

In the first half O. A. C. forced matters at the start, and had the ball once on St. Michael's five-yard line. Carey secured the ball just before half-time, in the centre of the field, and,

evading tackle, got over the line for a try, which was not converted. This ended the scoring in the first half.

O. A. C. had a little the better of the game in the second half, and forced a safety touch. Shortly before time was up St. Michael's added a rouge to their score, making the final score, St. Michael's 6, O. A. C. 2.

For St. Michael's Dooley, Carey, and Kelly were prominent. Murray, at full-back, played the star game for the O. A. C. He was sure, and got his team out of many tight places. Bracken, Baker, and Gunn also did good work. The line up of the teams was as follows:

O. A. C.		ST. MICHAEL'S	
Murray.....	Back	Foster	
Bracken	} Half-Backs	Dooley	}
Baker		Carey	
McFayden		Dixon	
Gunn.....	Quarter Back.....	Kelly	
McDairmidCentre.....	Burke	
McKillican	} Wings...	McAuley	}
Carpenter		Egan	
Van Buskirk		Pickett	
Fergusson		Ruddy	
Cameron		Rosler	
Warner		Buckle	
Referee.....	Frank D. Woodworth		
Umpire.....	W. B. Hendry		
Timekeeper.....	George Biggs		

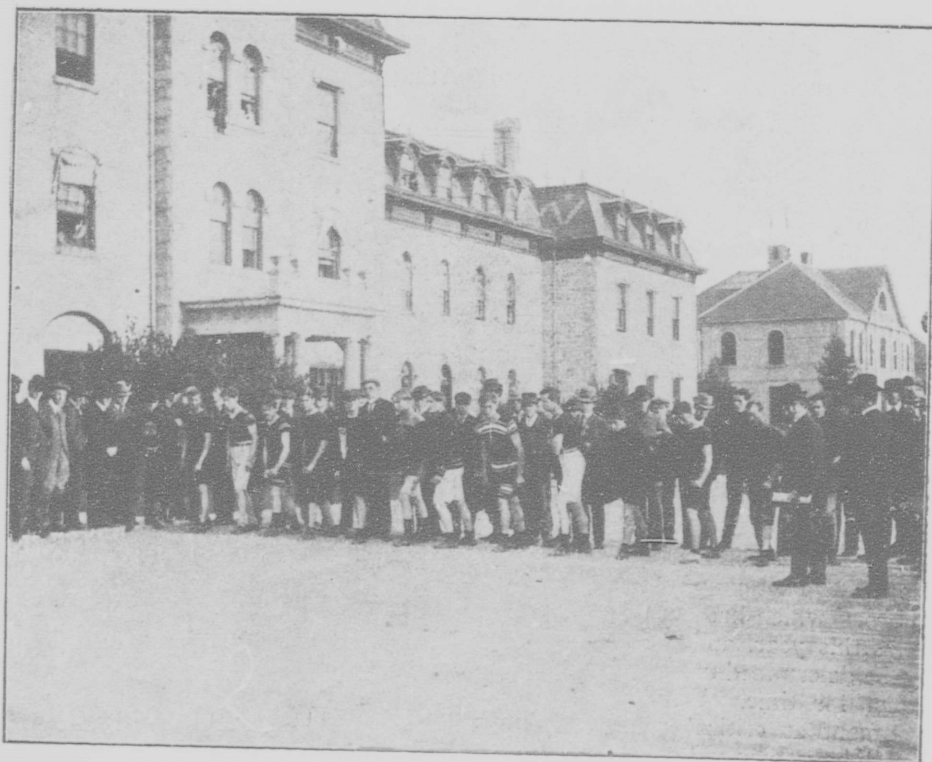
The Marshall-Harris Cup Series.

Second Year vs. Third Year.

The first game of the series was played on Saturday afternoon, November 22nd, between the Second and Third year teams. The game was characterized throughout by ragged playing on both sides. The high wind blowing down the field made it almost

They put forth strong efforts to overcome the lead which the second year had obtained, but they did not succeed in doing so. The final score was: Second year, 30; Third year, 17. The following is a list of the players:

SECOND YEAR.		THIRD YEAR.	
Murray.....	Back..... Carpenter	
Thompson	}..... Half Back	{ Fansher	
McFayden			Baker
Cooper			Dewar
Linklater.....	Quarter	Gunn	



START OF A FIVE-MILE RACE.

impossible for the side playing against it to make any gains by kicking, and this accounts for the big score.

The Second year had the choice of ends and kicked with the wind. By kicking and fast following up they succeeded in running up a score of 30 to 5 in the first half. In the second half things were reversed, and the third year had the advantage of the wind.

McDairmid.....	Centre	Thom
Warner	}..... Wings	Johnston
Cameron		Ready
Ferguson		Barber
McKillican		Guy
Wade		Williams
Ware		Rothwell

REFEREE..... Mr. Mace
UMPIRE..... Van Buskirk

The second game of the series was played on Monday afternoon, Nov.

24th, between the First and Second year teams. The game was close and hotly contested throughout, it being anybody's game up to the last few minutes. The Sophomore's were picked on as sure winners from the start, but the Freshmen made things exceedingly interesting for them, and it was only by steady, hard work that the Sophomore's succeeded in winning out in the end. The freshmen have a number of good men on their team, but they show a lack of practice. Bracken was the best player for the Freshmen, while "Bob" Murray was the bright particular star of the Sophomore team.

The game was started by the Sophomores kicking off, and after a few minutes' steady work they forced the ball up into the Freshmen's quarter. Warner secured the ball in a mix-up, and, after dodging several tackles, got over the line for a try, which was not converted. After the ball was kicked off again, the Sophomores, by rapid work, succeeded in forcing the Freshmen to rouge. The Freshmen had by this time got over the nervousness incidental of their first game, and, after a long dribble down the field, they scored a rouge on the Sophomores. Bracken returned the ball hard after the kick-off from the twenty-five yard line, and Irving followed up fast, got the ball over the line for a try, which was not converted. This ended the scoring for the first half; the score being Freshmen 6, Sophomores 6.

In the second half the Freshmen, encouraged by doing so well in the first half, started in to "do or die," and shortly after play had started they scored a goal on a place kick. This finished the scoring for the Freshmen. The training and practice of the Sophomores now began to show itself, and they forced the Freshmen to rouge twice in rapid succession. The play was close and exciting for a time, and both sides were making strenuous efforts to win, but the Sophomores, spurred on by the knowledge that they were three points behind, and only ten minutes to play, made a garrison finish and won out. During the last few minutes the Sophomores forced the Freshmen to rouge twice, and scored two goals on drop kicks from the field. The final score was: Freshmen, 11, Sophomores, 20. The teams lined up as follows:

SOPHOMORES.		FRESHMEN.	
Murray.....	Back	Hutchison	
Thompson	}..... Half Backs.....	Buchanan	
McFayden		Bracken	
Cooper		Logsdale	
Linklater.....	Quarter.....	Van Buskirk	
McDairmid.....	Censre	Monroe	
Warner	}..... Wings.....	Stayner	
Cameron		McKenzie	
Ferguson		Nancekwell	
McKillican		Irving	
Wade		Tufford	
Ware		Atkins	

REFEREE.....R. G. Baker

UMPIRE.....Carpenter

LOCALS.

Prof. H—re—t (to Fourth year):
 "What would be the most convenient day to visit the sugar factory at Berlin? MacD.—"Saturday; because all the school-teachers of Guelph go up then, and we could have a whale of a time."

Fawcett (in Lit., debating on "Resolved, that devotion to fashion is more injurious to humanity than the tobacco habit"): "I consider, Mr. Chairman, that nothing can equal the absurdity of wearing such low-necked *sleeves* as are now in fashion."



LOUIS SAYS—"THE LOADS OF VEGETABLES USED BY THEM GOLL DON STUDENTS IS ENOUGH TO BREAK ANY WHEELBARROW HANDLE."

P—f. of Ph—s—s (holding up an empty pair of tweezers):

"Now, I have here a very small weight, called a milligram; in fact, I don't think you can see it at this distance."

Neither they could, owing to the fact that it was reposing peacefully on the floor all the while.

Fairman (buying tickets for St. Andrew's concert): "Is there any chance for me to get into the 'family' circle?"

Instructor in Botany (on a field excursion to Division A., First year): "Now, gentlemen, be sure and pick up any weed that you don't happen to see, and find out its name."

The shades of night were falling fast,
When down the hall MacDonald
 passed,
Showing with pride, in either hand,
A cheese of that most famous brand—
 Limburger.

His brow was moist, he felt below
As hollow as a starving crow;
And so to fill that space he tried
With slices long, and deep, and wide—
 Of Limburger.

At break of day, upon the bed
We saw him lay his weary head.
Outside the gathering daylight shone,
But from his lips escaped a groan—
 “Limburger.”

’Twas sad to see him as he lay
Upon that bed at break of day,
Still grasping close, in either hand,
The wrappers, with that famous brand,
 Limburger



EX-STUDENTS, DO YOU RECOGNIZE OLD FRIENDS.

“Touch not the cheese,” a wise one said,
“Dense hangs its odor overhead;
Who now will be your loving bride?”
Aloud that clarion voice replied—
 “Limburger!”

“Oh, haste!” his room-mate loudly
cried,
“And throw the dirty stuff outside;”
But sweetly he responds: “I will,
When I have had a glorious fill—
 Of Limburger.”

“There’s gas escaping!” some one
cried;
“Beware of hydrogen sulphide.”
“What can it be?” arose the call;
A voice replied, far down the hall,
 “Limburger!”

Capt. Clarke (patting his well-devel-
oped chest): “There’s no packing here,
boys. Oh, you needn’t try to find your
own; you’ve all got one somewhere.”

Mr. de Coriolis, while experimenting
in the chemical laboratory, has acci-
dently discovered that nitrates exist in
the soil. We congratulate Mauritius
on the results of his scientific investi-
gations.

The College Bishop is to preach a
series of sermons on the inconveniences
of Sunday labor. He is not quite so
“green” as might be expected. Meet-
ings to be held in the electrical engine-
room twice a day.

REVIEW OF "REVIEWS."

"Cats, and How to Carry Them—Their Breeds, Feeding, and Management." By Jasper Johnson and Howitt. Based on the senior author's experience and the junior author's scientific experiments.

Note.—We would advise the Secretary to obtain this book immediately, as we understand that certain of the feline species became greatly *attached* to his apartments.

"Early Rising, and How it is Accomplished." A book for the young. By Silcox. Of great value to those who wish to leave on the 6 a.m. train.

"Cabbages—How to Get Large Specimens." By R. D. Prettie.

"At the Sign of the Babycarriage: or, Sunday Night in a Residence College." Author unknown.

BIOLOGICAL NOTES.

The only way to get farmers to use insecticides is to bring the subject into politics in some of these protested constituencies.

If the leaves and a large part of the stalks of these plants are destroyed, what insect is most likely responsible? Voice from the rear: "A cow, sir."

BERLIN ITEMS.

How did the "pay as you go" trio enjoy their dinner?

"All that is sweet is not sugar," exclaimed MacD., as he gaily alighted to converse with two fair damsels.

The two Mac's (as they come in sight of a large building): Which is it, a school-house or a hospital?

Buchanan & Mills (in the greenhouse, looking at the young tomatoes).

Mr. Wells: "Say, boys, is the tomato a fruit or a vegetable?" Mills (aside): "For heavens sake, Buchanan, which is it? There is a first year man listening."

Prof. Graham (to first year Poultry class): "Cleanliness is essential to successful poultry keeping. I once visited a poultry house which was cleaned out regularly once every three years, whether it needed it or not."

When Mr. Henderson wanted an example of a "dry fruit," some one suggested, "dried apples" and "history dates."

Did anyone ever see a genuine specimen of the following: "Good, fine, even, dry, velvety, easily dissolved, pure, clean salt?"

Prof. Dean: "What points to observe in the first ten minutes of churning?" Evans: "To get speed up slowly."

FICTION DEPARTMENT.

Mr. Henderson: Give me an example of a ciliate leaf.

Merkely: "A bed on a roof on a windy night."

Mr. H.: "Why? How's that?"

M.: "Well, it's certainly (h) airy, as I know by personal experience."

"Doc." MacFayden, in Lit. (reviewing current events): "There has been a new explosive invented called Hathamite, being the most powerful known to science. Its effect on Harveyized steel is very remarkable, but we have yet to hear of its effect on some nice, sweet, juicy fifteen year old college beef."

COLLEGE REPORTER



WITH the near approach of those final exams, the fact begins to reveal itself that it is high time for one to begin to apply himself. So long as danger is still some way in the distance, it seems to be a trait of nature not to become apprehensive. Thus, procrastination is the order of the hour. But the day of retribution is inevitable,

side of this dark inevitable lies a goal wherein can be had surcease from all your sorrows.

"Christmas is coming; it is almost here."

"What a relief!" is the expression that will find utterance from many a jade-worn student when, with lightened heart and fond thoughts of "mother and home," he throws his



THE FLOWER BORDERS.

and as this begins to dawn on one's mind he naturally thinks of the opportunities of which Father Time has bereft him, and of the many study periods spent in empty idleness. Therefore resolutions are made (of course, resolutions of necessity), and from now on the password will be, "plug, plug, plug."

But cheer up, boys! On the other

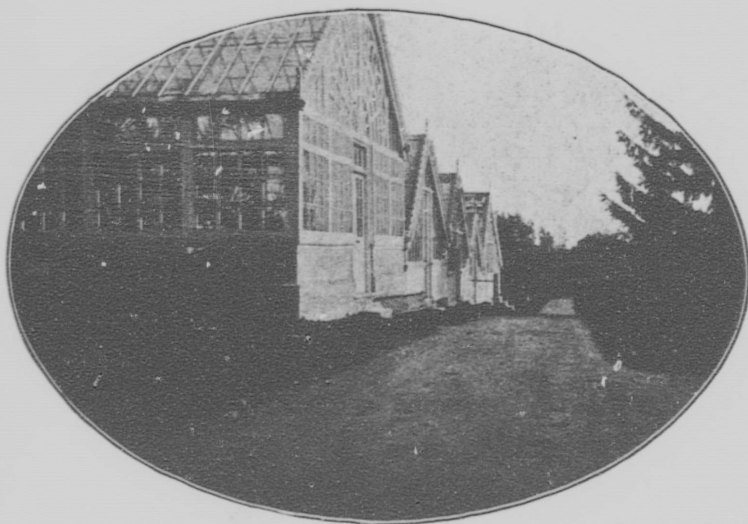
last books on the shelf. And, indeed, it is a relief, for behind him are tasks accomplished and before are two weeks of well-earned holidays.

The Experimental Union meetings, which will be held here on the 8th and 9th of this month, promise to be intensely interesting. To a student of agriculture will they be especially so;

for here one is made acquainted with all the latest advancements and improvements made in all branches of the science. Each year co-operative experimental work is carried on throughout the whole province on the best methods of growing different farm and garden crops, and also upon the best varieties to grow. Concurrent with these scientific researches are also carried on in Botany, Entomology, Soil Physics, etc., with regard to treatment of plant diseases, eradication of obnoxious weeds, the best methods of com-

away of the forests we are losing one of our most valuable resources, and it is becoming a dire necessity that we do something to preserve what is left, and take steps toward a systematic re-forestation. Dr. B. E. Fernow, of Ithaca, N.Y., will deliver two lectures on the subject, "The Evolution of the Forest," and "The Farmer's Wood-Lot," from which we hope to gain very valuable information.

There is also a social and a sentimental aspect to these meetings. Old students take them as an opportunity



A GLIMPSE OF THE GREENHOUSES.

batting injurious insects, and the most favorable conditions of the soil for obtaining the most satisfactory results. All the facts thus gleaned are then brought together and at these meetings made known.

But perhaps the most attractive feature of all will be the report of the committee on co-operative experiments in forestry. This is a movement which was started for the first time last year, and thus will be a sort of novelty. The forestry question is becoming an important one. With the clearing

for visiting their alma mater, and drinking in memories of old college days. Thus there is a simultaneous gathering which brings together old class and college mates, and renews acquaintanceship.

Following immediately upon the Union will be the Fat Stock Show. This is what will interest the stock-raisers, and the poultrymen and dairymen. Stock from the herds and flocks of the very best feeders in Canada and the United States will be exhibited.

tions were pursued by the Ontario Government with the owners for its purchase, but at that time the parties concerned could not come to a conclusive agreement regarding the transfer. When it was thought impossible to acquire the desired property, another site immediately behind it was chosen, and had the building gone up this past summer, it would have stood upon this latter location, which would have always been a source of dissatisfaction to the promoters, as the situation was anything but desirable. Upon the new location the situation will be reversed, being all that could be wished for. The building will now face the Brock road instead of the cross road, as would necessarily have been the case had this change not been made; and the ground in front of the structure will be transformed from one of the worst "rookeries" we have about the College into a beautiful campus of drives, walks, trees, shrubs, and flowers.

Mottoes for 1903

"Start right and right away."

"There is something better than making a living—making a life."

"Don't wait for your opportunity—make it!"

"Stick to your aim. The mongrel's hold will slip, but only crow-bars loose the bull-dog's grip."

"Lend a hand. The best way to help yourself is to help your neighbor."

"Promise little and do more."

"Be king of yourself and you will conquer the world."

"The world makes way for a determined man."

"Be brief. Your time and the other man's is precious."

"Character is the poor man's capital."

"A clear conscience wins the goal of all men—happiness."

"To smile in victory is easy—in defeat heroic."

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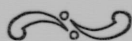
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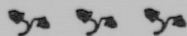
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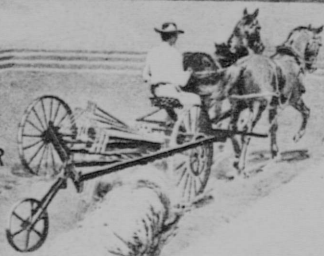
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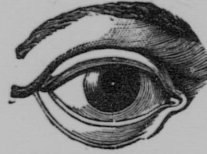
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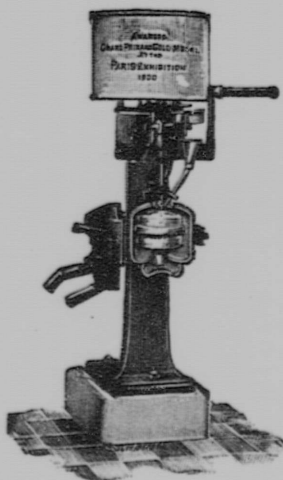
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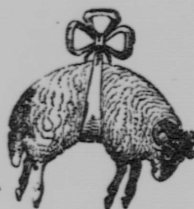


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