

PAGES

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THE DIGNITY OF A CALLING IS ITS UTILITY.

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Man's Growing Control of Nature

BY PRESIDENT FALCONER, TORONTO UNIVERSITY.

THESE are few greater pleasures in life than a walk into the country on a warm spring afternoon. To get away from the city is to enjoy a renewal of freedom in the openness of the fields, the wide horizon and the pure air, while the notes of the birds provide a sense of companionship. The dark ploughed earth tells of fresh strength for growth; swelling buds and early flowers are the promise of fertility, of grass for cattle and herb for the service of man. On the confines of a city men are returning home having gone forth unto their work and their labor until the evening. Ruysdael's pictures have usually some human figure in the landscape which would be otherwise too overpowering a solitude. This may also signify to us that without man nature would have no true interpreter. Be that, however, as it may, most of us, I fancy, enjoy the countryside all the more when we catch sight of a human figure, or even of cattle in the field.

Perhaps it is the absence of human or animal life that makes some persons unutterably lonely on the shore of the ocean. This feeling at times overtakes

even one who has lived by the sea all his life, though the sound of many waters comes nearer to the human voice than any other of nature's utterances; but in fog, mist and storm the ocean is too terrible to afford companionship to the ordinary man in his average moods. One white sail dotting the blue summer ocean suggests more of life than the incessant breaking into white of the wave as it rolls lazily over the peaks of the jagged ledges. Those of certain temperaments are made lonely by the ocean at any time; such people probably choose by preference an inner stateroom, or if for some reason they have an outer room, they avoid looking through the port on the waves stretching far out to the horizon. A streak of smoke from a vessel even hull down breaks the loneliness, and the interest aroused thereby is not the only element that induces a change of feeling. I suppose that even more impressive is the solitude of a desert, but as I have only crossed a desert in a Pullman amidst the comforts of civilized life I know nothing by actual experience of such loneliness. At night it may be that the twinkling

of the stars, their changing brilliance, the trails of light streaming across the sky make the silence of nature less awe-inspiring than it is by day.

Life is to most of us essential for the enjoyment of nature, especially in the majestic scenes, whether among high mountains or on the ocean, when the feeling of awe is at times overpowering. Never is our insignificance in comparison with the mighty forces that surround us more manifest. But again it is the solitary individual who is thus impressed, and except in the actual convulsion of an earthquake or volcano the feeling of awe is dissipated when a multitude of men and women are found together in majestic surroundings.

This feeling of awe is not the same as fear, though the two are akin, and indeed some thinkers have sought to trace in this emotion of awe an unconscious homage of the spirit of man to the imminent divine spirit in nature. Undoubtedly the element of fear enters into those religions in which the homage is paid to their deities through nature-worship. Be this, however, as it may, nature was for ages overwhelmingly awesome to most nations. Of late among the peoples of our Western civilization this awe has been lessening. Men are growing more familiar with nature; they are gaining greater mastery over it. Centuries ago the "merry Grecian coaster" hugged the shore partly because his boat was a cockle shell; the braver Tyrian trader "Snatched his rudder and shook out more sail

And day and night held on indignantly
O'er the blue Midland waters with the
gale,

Betwixt the Syrtes and soft Sicily,
To where the Atlantic raves

Outside the Western straits, and unbent sails

There, where down cloudy cliffs,
through sheets of foam,
Shy traffickers, the dark Iberians come;
And on the beach undid his corded
bales."

Man was beginning to assert his control over nature, but the venturesome spirit did not mature till the fifteenth century, which was an age of discovery memorable for many voyages, to the West Coast of Africa, round the Cape of Good Hope to India and the far East, led by brave men sometimes lured on by hope of gold but often by the fascination of the unknown. The voyage that appeals most to our imagination and seems to surpass the others in its daring, and its seamanship was made by Christopher Columbus in 1492, when he invaded the solitude of the Western ocean. They were the first that ever burst into that solitude and Westwards hereafter was the trend of exploration. It was the discovery of a New World in more senses than one. Then appeared the great sailors whose familiarity with the ocean in its variable moods so dispelled fear that they could think of it as their home. Man was asserting his mastery. He knew what lay beyond; he learned to use the fickle winds, and when neither sun nor stars appeared for many days to go by dead reckoning.

With the sense of mastery the spirit of mystery has vanished; science, knowledge, experience are making exact calculation possible. Thus we have a "Mauretania," the proof of man's mastery over nature, the product, almost miraculous, were we not able to trace each simple step in the development of adventure, experience and

faith. So far has nature been subdued that the arrival of the steamer can be timed with accuracy even in the storms of mid-winter, and through the thick fog the sinking "Republic" can call others to her aid. It might seem as though this mastery would rob nature of her romance and that adventure of the ancient sort had withdrawn from the world of modern men who know and control nature. But this is not so. Not more than a month ago we had proof that civilization and science have only heightened the inquisitive spirit, for what more daring challenge could be made to nature to show her terrors and overwhelm man by her rigors, her power and her awesomeness, than that venture so successfully completed by Lieutenant Shackleton and his companions? They sailed in the "Nimrod" to the barrier of Southern ice, and then started forth on different expeditions. They climbed a snow-clad volcano, Mt. Erebus, 13,000 feet high, examined its crater, and conquered mountain range after mountain range, crossing endless glaciers with deep crevasses, travelling during the several months of their journey seven hundred miles, discovering the south magnetic pole and reaching a point within one hundred and eleven miles of the South Pole. This was only possible because of their scientific knowledge, and the results of scientific invention. From this journey they have brought back valuable additions to human knowledge, have lifted a little more the veil of mystery that hangs over the world, have extended men's sense of mastery over nature, and have proved that the spirit of romance and of heroism still moves the heart of the modern man with all his scientific accomplishment.

This ability to control nature is a proof that the mind of man is growingly masterful. Insignificant though man may seem to be, he has learned to dread nature less even in her most awful moods, and by the assertion of his right to direct and use her forces he has developed his own latent powers. By overcoming obstacles we grow in strength. The tasks essayed and accomplished at present would some generations ago have been judged almost miraculous, and the daring of the modern man to border upon impiety; indeed, the Greeks would have feared that such treatment of nature would have brought ruin similar to that which fell upon Xerxes for his insolence in encroaching upon the domain of the gods by bridging the Hellespont.

But with all this mastery has there been a similar advance in the mastery of man over himself? This is really the supreme question. Or has he lost any of his finer instincts? Or, is he in danger of losing any? It has recently been suggested that the application of modern methods in a masterful scientific spirit to the solution of the social problems of the day may succeed in relieving our poverty and our inefficiency, and that Charity may soon be organized on such an exact system that it will minister its remedies with the precision of a machine.

But will there not disappear at the same time the spirit of human compassion which has so often enveloped the head of an ignorant and even incompetent dispenser of mercy with a halo of divine glory? The fine word "humanities" is applied to some of the most distinctive and immemorial studies of a university. Assuredly it would be a sorry ex-

change were we to lose amidst the system, science and learning of our universities and colleges our sympathy for our fellows, our interest in their affairs, and the romance and

wonder which the heroic or reverent spirit is able to trace almost anywhere be it in outer nature or in the joys, fears, struggles and hopes of the common multitude.

Imperial Federation.

BY ALEX. McTAGGART.

IF we will but pause for a moment in this busy, bustling age and turn over the pages of history, we shall find that that history was marked at various points by great epochs, and I venture to say that, in this the early part of the twentieth century, we, the British nation, are approaching an epoch of vital importance to the existence of our empire. That existence is dependent upon the governance and unity of the empire, which, I make bold to say, presents one of the greatest unsolved problems in the world to-day. Indeed, on its solution hinges the destiny of our race. If, then, we hold dear the existence of our great empire, Imperial unity should be our watchword. It is, however, with that form of unity—Imperial Federation—that this article is intended specially to deal.

The term Imperial Federation means the uniting into one great league all the self-governing colonies in the empire, with one supreme parliament at Westminster, composed of representatives from every autonomous state in the realm. The idea originated in the year 1884, when there was formed in London what was known as the Imperial Federation League, whose chief resolution declared that in order to

secure the permanent unity of the empire, some form of federation was necessary. For many years that league worked remarkably well. It stirred up public interest and was indirectly instrumental in the inauguration of imperial conferences for the consideration of matters of imperial moment. Amongst the subjects discussed by those conferences was this idea of Imperial Federation, and the ultimate conclusion that was arrived at with respect to it, at least in the form presented by the league, was to the effect that it would mean the encroachment upon the principles of self-government and would tend towards colonial subjection. I have not the audacity to challenge such a conclusion, but what I do declare is—surely there is to be found some form of federation that can be made practicable. The devising of such a scheme is at present engaging the attention of some of the greatest minds in the race—men of foresight fired with spirit of empire preservation. If such a scheme can be devised, I think we can lay claim to having succeeded in working out the greatest political conception that has ever exercised the ability of any people in part of the world. And surely such a

task is not beyond us when we consider that there are operating throughout the world to-day huge commercial communities and societies successfully controlled by boards of directors in London.

The necessity for greater imperial unity cannot be over-estimated. The constituent states of the empire are growing rapidly into a state of adolescence, which speaks well for their future careers. At the same time, there appears to be some danger that unless that growth is wisely and courageously guided the unity of the empire might be broken or the imperial tie loosened. I do not say that the colonies are in favor of adopting that suicidal policy of separation. (Let Canada separate from the empire and what would be the result?—an united North American Republic, or, on the other hand, let Australia, with her dearth of population and her vast uninhabited northern territory, adopt the same policy, and what would be the issue?—she would be inundated by a mighty Mongolian tidal wave.) But what I do contend is—separated as the colonies are from the motherland by thousands of miles of ocean and without any bond of common interest between them, there is urgent need for something that will link them together and to the mother country in a chain that would be hard to sever. With the tendency towards colonial alienation, with the growth of other great European powers, with the awakening of the Mongolian races, with the presence in the out-lying parts of the empire of vast tracts of unpopulated territory, with latest dissention amongst certain of the dark-skinned peoples in the realm, and with keen foreign competition in the spheres of industry and commerce, there is indeed

urgent need for the closest possible welding together of the various constituent states of the empire. Apart from these disintegrating forces the government of the United Kingdom itself is a mass of contradictions, anomalies and fictions. The cabinet, one of the strongest executive organs on earth, is now almost "unknown to the law." In theory the so-called Imperial Parliament could revoke the parliaments of the colonies to-morrow. In practice, however, it has no such opportunities. The self-governing colonies, then, for all practical purposes, are separate kingdoms with the same king at their head. The states of the empire stand on an equal footing except that the government of one of them represents all the rest of the community of nations, and is gracefully permitted, in consequence, to undertake and pay for maritime defence. Monarchy, then, is the only binding link; what then is empire? you ask. That imperium, the power of sovereignty, the right residing in some quarter to issue a command which must be obeyed, resides nowhere. Only in Asia is this true imperium exercised. Again, though the elector in the colonies has never forfeited any imperial rights he may possess in common with the elector in London, he is, as a matter of fact, absolutely excluded from all control in the administration of India. Supposing that the mother country should be drawn into a quarrel with some other power over something connected with India, the colonies would be placed in a very dangerous position, not having a voice in the question under dispute. Here, then, is a point which shows the loose cohesion of the fabric, and indicates that Great Britain has by good fortune escaped, rather

than by forethought provided against dangers which may strain to the breaking point.

The special advantages to be derived from a workable form of imperial federation are numerous. Space, however, will permit me to mention but a few. In the first place we would have that chief essential — a better feeling throughout the empire—a spirit of brotherhood and of common interest, welding into one homogeneous whole all parts of the realm.

"No matter that at different shrines

They prayed unto one God,

No matter that at different times

Their fathers won the sod;

In fortune and in fame they're bound

In stronger links than steel,

And neither could be safe nor sound

But in the others' weal."

Further, reciprocity, embodying a customs union providing for free trade within the empire and levying the same tax as is now levied on goods from foreign countries, would be one of the first direct results of federation. Then there is the matter of Imperial Law. The "King's Writ" runs throughout the empire; but there is no common system of law, and no unity even upon such matters as marriage, bills of exchange, bankruptcy, patents, copy right and capital punishment. If we could also build up in the British Empire a common idea of the administration of justice, a common notion of what justice is, a common faith that justice is certain to be administered whether you are in the Yukon or in Australia, in Toronto or in London, surely that of itself would be a power towards a greater Imperialism. Again, we should have laws under which no

goods could be conveyed from one port to another of the empire except in vessels owned in the empire. This would prevent other countries such as France or Germany from usurping British trade—an important matter in this age of struggle for commercial supremacy. These problems, and many others, would find their solution under the new regime.

And now we come to that most potent factor of this great subject—the question of Imperial Defence. If the empire is not united in the matter of defence, how can that empire be expected to remain intact? Think of what would be the fate of Great Britain or her colonies if the naval powers were superceded! Think of what would happen in the Old Land were the colonies to become the prey of other powers!—Great Britain, not having then an outlet for her increasing population, would become a veritable charnel house. The navy, then, is our greatest bulwark. Canada and Australia may deem it good policy to withhold from the Imperial Navy their contributions, in favor of promoting their own individual defence, but this is nothing short of false economy. A great navy, built on the two-power standard, with several mighty squadrons distinguished as Canadian, British or Australasian appears more reasonable and imperialistic than the idea of a colony, by its own inadequate means, attempting to defend an extent of coastline unfitted by nature for defensive purposes. But you point out the cost of a "Dreadnought." The cost of a navy of "Dreadnoughts" is as nothing compared with the loss of nationhood and of empire! In matters concerning defence the empire has arrived at the parting of the ways, and the de

cision which road is to be taken in order to find security cannot be much longer deferred. The great question in this matter should be not how much can each fragment of the empire get out of the other fragment, but how much can each fragment of the empire give for the well-being of the whole? What we want is unselfish patriotism and that kind of cohesion that will make everybody in the empire instinctively feel that while we do not wish to quarrel with the rest of the world, if the emergency arises we shall be found standing back to back absolutely and indefeasibly against the world. But there are other obstacles in the path of our great ideal. There is the tendency for the colonies to forget what they owe to the motherland—the tendency to become intoxicated with that spirit of independence to the detriment of the whole British race. Great Britain, herself, also presents an obstacle in that she is unwilling to agree to the adoption of free trade within the empire—a policy which would materially strengthen the empire. Imperial ignorance—a lack of knowledge of the empire—also stands in the way. With out that knowledge true imperialism cannot exist.

These barriers must be broken down, and that right speedily. There must be promoted a careful, intelligent study of this subject on the part of the great body of the people, so that they may not only have a clear idea for themselves, but may also force the leaders of the governments into line with public sentiment. There is a certain sort of individual who sneers at the love of country and especially at the recent development of imperialism. He says that it is only a sentiment. I grant that it is only a sentiment, but, at the

same time, I maintain that sentiment has built up and maintained great nations, and to-day is ruling the world. Edmund Burke, one of the master minds of the human race in speaking of sentiment said, that though it was as light as the air we breathe yet it was as strong as steel to bind a nation together; and Sir Walter Scott, in his rich poetic imagery gives us the lines:

“Breathes there a man with soul so dead

Who never to himself has said,
This is my own, my native land.”

“Where liberty is, there is my country” was the sentiment of that great apostle of freedom, Benjamin Franklin. Let it be our sentiment then to love the British Empire, for within its vast domains there is to be found the greatest degree of freedom known to the history of civilization. We have but to read the histories of the great civilizations of the past—Rome, Greece, Spain and others—to find that they all lacked that rare cement which binds the individual into the family, and the family into the state. The golden age of Greece came as a bright sunrise in the East, speedily ascended to its zenith, and rapidly set behind the hills of eternal night. She had not before her gaze that bright star of liberty and the freedom and equal rights of all, and she soon went to pieces on the rocks of discord and schism. Is our great British Empire, upon which the sun never sets, to meet a similar fate? Are we also devoid of that sentiment, the lack of which brought these empires of the past to the dust? Shall that flag that braved a thousand years the battle and the breeze, be humbled and defiled and shorn of its rich heritage of power?

Have we forgotten the traditions of that rugged old land in the northern sea—the land of our fathers, the land of liberty, glory, and renown? Shall we be found faithless in the fulfilment of that sacred trust—the trust of handing down intact to our children that great heritage given to us by the great men of the past—men who fought at Trafalgar, or who shed their life-blood on a field of Waterloo, or who raised their voices within those sacred walls at Westminster that we may be free? Are we by our cold indifference to the spirit of imperialism suffering our great empire to decay? Or do we realize that the power and protection of the motherland is the wing under whose shadow we should rest; that the victorious sweep of her progress is the march in which we should all join; and that the united strength of Great Britain and her colonies is our surest bulwark against every foe? To all these let us echo and re-echo the stirring lines of Wordsworth:

“It is not to be thought of that the flood
Of British freedom, which to the open sea
Of the world’s praise from dark anti-
quity
Hath flowed, ‘with pomp of waters un-
withstood,’
“Roused though it be full often to a
mood
Which spurns the cheek of salutary
bands,
That this most famous stream in bogs
and sands
Should perish; and to evil and to good
Be lost forever. In our halls is hung
Armoury of the invincible Knights of
old;
We must be free or die, who speak the
tongue
That Shakespeare spake; the faith and
morals hold
Which Milton held—In everything we
are sprung
Of Earth’s first blood, have titles mani-
fold.”



Parasitology

BY JOHN L. TODD.

AN associate professorship has been established at McGill University in connection with the Faculty of Medicine, and the Macdonald College at Ste. Anne de Bellevue. This article has been written to explain the objects of the new department to the readers of the Ontario Agricultural College Review, and to enlist their interest and sympathy on its behalf.

Most of the diseases of Canadian domestic animals are caused by minute vegetable parasites, usually by bacteria. So far as is known at present, only a few of them are caused by small parasites belonging to the animal kingdom. Perhaps the commonest examples of diseases belonging to the first class are anthrax and tuberculosis. Among the diseases caused by animal parasites are, of course, all those affections produced by the various insects, worms and flukes which infest domestic animals. More important, however, are the diseases produced by the smallest of animals—the Protozoa. The importance of worms in the production of animal diseases has long been known, that the Protozoa have a place in animal pathology has only recently been learned. During the past ten years investigation has shown that many obscure diseases of animals, and men, are due to these parasites; consequently, their study has become an important part of veterinary and human medicine. A knowledge of protozoology bids fair, indeed, to soon be as essential to one who studies dis-

ease as is a knowledge of bacteriology.

The most important of the diseases caused by Protozoa have been studied in other continents than North America. Such good results have been obtained from research work done on this subject in Europe, Asia, Africa, and South America, that it seemed necessary to attempt research work of the same character in Canada; even although many of the diseases caused by protozoa are not known to exist there, it was thought that an investigation of some of the obscure diseases which occur amongst Canadian animals might show them to be due to protozoa as yet unstudied.

The success of the department, so far as it is concerned with the study of animal diseases, will obviously very largely depend upon the co-operation and assistance which it meets from those who are brought most intimately in contact with diseased animals. Sickness, of an unrecognized nature, and subsequent death occurs not infrequently among farm animals. If such cases could always be investigated, the causes of these illnesses might be learned and successful means of treatment might thereby be suggested. But in order that a disease may be studied, an opportunity must be given for the examination of the infected animal. It is by providing such opportunities that the veterinarians, farmers and stock raisers will be able to decide the success of the newly created department at McGill University.

The request is made at once: Will those who read this article bring in instances of obscure disease in animals or birds of all sorts to the notice of the Department of Parasitology at Macdonald College, and will they inform their friends of the existence of the department, and ask them to assist it in the same way?

It has been known for a great many years that protozoa may be parasitic within the bodies of men and animals, but it was thought at first that they

which the parasite of malaria is disseminated was demonstrated by Ross, who showed that it was taken up with the blood when a sick person was bitten by a mosquito and that the disease was transmitted by the insect to healthy persons through its bites. Previous to this, in 1894, Bruce had shown that a very important disease of horses, the tsetse-fly disease, was produced by a protozoan of another sort, a trypanosome, and that this parasite was transmitted from sick to healthy animals



A comparatively early case of Trypanosomiasis in a helper. The arrow points to a much enlarged cervical gland.

were harmless to their host. It was not until Laveran, in 1882, with those who followed him, showed that malaria was due to an infection by a protozoan parasite that the importance of protozoa as pathogenic organisms commenced to be appreciated. In the light of what we now know, it seems marvellous that this wonderfully important discovery should have been so unstimulating to those interested in the investigation of the causes of disease; for it was only in 1898 that the means by

by means of the bite of the tsetse-fly. These discoveries stimulated research so that since 1898 a small army of laboratory workers have been investigating diseases of both tropical and temperate climates with the object of finding whether they were produced by protozoa. Their work has been attended with considerable success, and the protozoa have now been found to be the cause of many diseases whose nature was previously unknown. Their work is by no means completed, since

the ways in which these pathogenic organisms produce their ill effects are almost entirely unknown and since there remain still other diseases whose causes have not yet been discovered.

The majority of the known diseases caused by protozoa have their home in tropical or sub-tropical climates. Of those which occur in Canada amongst animals, the best known are Dourine, Red-water, Hydrophobia, Blackhead in turkeys, and the white diarrhoea of chicks.

in animals is Nagana, the tsetse-fly disease of South Africa. It is because of this disease, and closely allied ones, that the whole of Central Africa has remained undeveloped up to this late day. The tsetse-fly disease has killed all of man's domestic animals so soon as they were brought into the territory where the fly existed. Consequently, none of this territory has been settled by peoples, like the Arabs and Europeans, who depend upon domestic animals, and it has been avoided by



Comparatively early Trypanosomeasis in a stallion. Emaciation commences to be marked. The oedema of the abdomen is apparent.

Some of the most destructive of animal diseases caused by the protozoa are those due to that group of parasites called trypanosomes. These diseases are of great interest to Canadians since one of the first known of them—Dourine—has been comparatively recently introduced into Canada, and exists at present in at least one of the Western Provinces.

Perhaps the most widely known of the diseases caused by trypanosomes

traders since the only means of transporting goods is by human carriers.

In Asia a very similar disease called Surra exists; in India and Burmah it is a very destructive disease. Epizootics caused by it have been particularly virulent when the parasite has been introduced into territory from which it was previously absent. For example, during the South African war, cattle were brought from India to the Island of Mauritius; from there they were

forwarded, as they were required, to South Africa for feeding the troops. These cattle brought Surra to the island; the disease spread extremely rapidly and killed practically every equine and bovine there. It became impossible for the Mauritians to collect their crops and small railroads were laid down through the plantations for this purpose. The disease was introduced into the Philippines in the same way, but the epidemic caused by it there was not so severe as was the one in Mauritius.

In South America another trypanosome causes a disease in horses called Mal-de-caderas. It has made the raising of horses absolutely impossible in some districts.

Dourine occurs all through the south of Europe, as well as in the north of Africa. It differs from the diseases which we have already mentioned in the mode of its dissemination. The tsetse-fly disease, or Nagana, is transmitted through the bites of the fly which gives its name to the malady. Surra is carried by flies of at least two species—the small *Stomoxys*, of which varieties are well known in this country, and by various horse-flies, (*Tabanus*). The mode of transmission of Mal-de-Caderas is not known with certainty; it is believed that it may be carried by a *Stomoxys* and, possibly, by a variety of horse-fly. It has been suggested the fleas may also disseminate it. Dourine, although it has been transmitted experimentally by fleas, is probably only carried naturally from animal to animal through coitus.

The symptoms of all these diseases have much in common. In all of them there is fever, loss of strength, and emaciation, although the appetite remains good throughout the whole

course of the disease. All of them almost invariably end fatally. Although these diseases sometimes run an acute course, they are usually more or less chronic and the infected animal may live, though usually obviously ill, for a considerable number of weeks or even months.

Dourine has been known in Europe since the early part of the nineteenth century. It was introduced into the United States in recent years by means of a stallion which was brought over from France. It probably exists at present in an endemic state amongst the half-wild range horses of some of the Western States. It has existed in Canada since 1904. In the horse, the disease may present one of two types; it may be acute or chronic. In the acute form of the disease the animal may die within a few days, but this type is exceedingly rare; the chronic type is much more usual.

In the chronic type of the disease there are usually three fairly well defined stages. The first is characterized by the presence of slight oedemas, and by a slight temperature (100° to 101.5° F.); the horse no longer seems to be itself and is easily fatigued. In the second stage wasting is more marked; the animal lies down constantly and when it attempts to get up the weakness of the hind quarters is particularly marked; the temperature is higher (about 102.5° F. in the evening) and the lymphatic glands are enlarged. At this stage appear the "plaques," which are the one certain sign of the disease. These are firm, rounded swellings and look "as though a metal disc (such as a dollar) had been slipped under the skin." They occur most commonly on the sides and hind quarters but they have been seen upon almost every part

of the trunk. They are often absent and indeed they had not, up to last summer, been observed on affected horses in Western Canada. In the third stage the anaemia and weakness of the animal is very profound and the emaciation is extreme. Death often occurs through secondary infections, since the animal is extremely weak and easily contracts a second disease, such as pneumonia, through which its sufferings are quickly terminated. The duration of the disease varies from two to six months, although it may sometimes last for as long as two years.

As will be at once recognized by those who have anything to do with animals, there may be nothing characteristic in the symptoms of this disease. Its recognition, in fact, is extremely difficult and its absolute diagnosis depends entirely upon the finding of the trypanosome to which it is due. It is often, even for an expert pathologist, a very difficult task to find the trypanosome and, indeed, in some epi-

demics it has remained undemonstrated for many months. It is fortunate that the means by which the disease is disseminated can be so easily controlled; otherwise, since it is so difficult to recognize it, and since no absolutely efficacious treatment exists for it, it might easily spread through the whole of the equine population of a country and make horse raising impossible. The only certain method of preventing its spread is the immediate slaughter of every animal which is even suspected of being infected by this disease.

A great deal of research work has been done with the object of finding a cure for Dourine. At first the results obtained were absolutely of no value but recently they have been more encouraging, and some experimentally infected animals have been cured. But the treatment is so tedious, so difficult and so uncertain that only in extremely exceptional cases, where a particularly valuable animal is infected, would it be worth while to attempt its cure.



Far-advanced Trypanosomiasis in a steer. Emaciation and weakness was extreme.

Fairs and Exhibitions, and Their Educational Value

BY J. LOCKIE WILSON, SUPERINTENDENT OF AGRICULTURAL SOCIETIES.

IN 1765, nearly a century and a half ago, the first exhibition of agricultural products was held in Canada, and forty years later in Ontario, Old Niagara, then known as Newark, saw the beginning of what was destined to be one of the greatest educational institutions organized in the interests of the farmers of Canada. The seed sown at those early dates has grown into a mighty tree with branches spreading from ocean to ocean. A score of pioneer farmers attended that first fair on the shores of Lake Ontario. In 1908, one million three hundred and fifty thousand people passed through the turnstiles of the fairs in this Province alone. About one hundred dollars covered the value of the exhibits at our first fair. The products shown at the fairs in this Province now amount to millions of dollars. Five pounds, ten shillings and sixpence were offered in prizes at that pioneer exhibition, while last year two hundred and seventy-five thousand dollars were awarded as premiums in cash at the exhibitions of Ontario.

It was out of the Agricultural Societies of Ontario that the Department of Agriculture, which is doing such splendid work for the farmers of this Province, was gradually evolved. Before that period the work of inspiring the farmers to adopt better methods of cultivation and of breeding a higher class of pure bred stock chiefly depended on the societies. Nor did their

usefulness cease when the Government of this Province, recognizing the importance of the farming industry, established a regular Department of Agriculture. The societies had an ever broadening field to work in other than the holding of exhibitions, which was but one of the many purposes for which they were organized. Other directions in which their efforts were concentrated were the holding of ploughing matches, offering prizes for the best kept farms and various kinds of field crops, the keeping of pure-bred animals for the improvement of the live stock of the district the purchase of seed grain of new and tested varieties, the circulation of agricultural journals, offering prizes for essays on the various phases of agricultural work, and taking action for the eradication of noxious weeds and the destruction of troublesome insects. One or more of these lines were taken up by every society, and a vast amount of benefit to the Province at large has down through the years accrued therefrom.

Many of the societies organized nearly three-quarters of a century ago hold their exhibitions at the same headquarters, and are still known by the name selected at those early dates, and I know of officers of some of these organizations who have grown grey in the service, having been continuously in office for half a hundred years.

It is difficult for those in the wealthier and more prosperous sections of this Province to realize what the small back township fair, far from the mad ding crowd, means to the pioneer settler in those remote districts. The Fall Fair is practically the only annual outing for these farmers and their families, and though the exhibits may be few and the gate receipts limited, these little fairs are appreciated and fill a large place in the hearts of the settlers whose social pleasures are indeed not great.

Societies have recently been taking up new lines of work with splendid results. Among these Spring Horse and Cattle Shows and Seed Fairs, standing field crop competitions, demonstrations in butter making, cooking, poultry and apple packing, and live stock judging contests are prominent. For the children in rural districts prizes are being offered for the best collection of properly named flowers, apples, vegetables and weeds. These latter are usually fastened on strips of cardboard. Another form of competition that is being successfully adopted is to have barrels filled with mixed varieties of apples to be sorted and properly named by the boys and girls.

In recent years the system of judging at fairs has been re-organized, and a large and ever increasing number of societies find it advantageous to employ judges selected by the Department of Agriculture. Last year two hundred and thirty of these judges of

ficiated at exhibitions in this Province.

Under the old Agricultural and Arts Act fixed grants were given to District and Township Societies without regard to the work done. The new Act, passed in 1906, based the grants to these societies on the average expenditure for purely agricultural purposes for the previous three years, as defined, making no distinction between District and Township Societies. This change was in the right direction, and has proved satisfactory to all concerned, each organization having now an incentive to do its best and thereby receive an increased grant.

The following are the grants voted for this work in 1909:

For Societies holding Fall Fairs	\$76,000
Pure Seed Fairs.....	500
Spring Stock Shows.....	3,500
Field Crop Competition.....	7,000

Total... ..\$87,000

There are three hundred and sixty Agricultural Societies in Ontario, and the majority of them have energetic and efficient officers. Last year was the banner year in the history of these organizations, both from a financial and educational point of view, and the quantity and quality of exhibits, and the attendance were never before equalled. With the educational features kept well in the forefront Agricultural Societies in Canada, composed as they are of the most intelligent classes of the farming community, have indeed a bright and prosperous future before them.

Pictures and Painters

BY DAN. H. JONES, B.S.A.

PICTURES, like books, provide a medium for the expression of the mind, the imagination, the heart and soul of their producers. The whole gamut of human experience, whether it be of practical or of ideal import, whether it be of concrete fact or of spiritual perception, is played up on by the painter as well as by the writer. The development of pictorial art, the rise and fall of schools of painting, has been, at least during and since mediæval times, practically parallel with that of the development of literature, the rise and fall of schools of writing. Have we a Mediæval Literature—a Dante, a Boccaccio? We have a Mediæval Art—a Raffael, a DaVinci. Have we a Renaissance in Letters—a Shakespeare, a Rabelais, a Milton? We have a Renaissance in Colors—a Titian, a Rubens, a Michael Angelo. Have we a Classical School of Penmen—a Dryden, a Pope, a Johnson? We have a Classical School of Brushmen—a Claude, a Wilson, a Reynolds. Have we a Romantic School of Writers—a Scott, a Babzæ, a Byron? We have a Romantic School of Painters—a Gilbert, a Pettie, a Stone. The principal life and nature men of the books are offset by as numerous and as potent a body of canvass men; while the many-headed letters monster of to day, whose existence is made possible by cheap paper production, by the wonderful improvements to printing machinery, and by popular and general education, has its counterpart in the

enormous mass of picture work, good, bad and indifferent, that fills the picture galleries, and illustrates our magazines and wall spaces. As in the realm of letters at the present day in addition to work that is worth while, we have a plethora of second rate and third rate matter, yea, of matter that has no rate at all, so in the realm of pictorial art, the same conditions exist. The galleries of the older countries, especially of France and England, that hold their annual or other periodic exhibitions of new pictures, have on their walls year after year, so the critics tell us, thousands of canvasses, many with little genuine significance, and as many or more canvasses as are hung on the walls are rejected, either because there is no room for them or because they do not reach the standard of excellence required.

But as there are books and books, so there are pictures and pictures. As in letters a Tennyson and a Carlyle, a Browning and a Hugo, a Swinburne and a Hardy stand out from their fellows in their power of appeal to the depth of our souls and the height of our imagination, so in pictorial art we have a Turner and a Watts, a Millet and a Corot, a Herkomer and a Tadmæ, who by their charm and their force, by their truth of vision and their accuracy of representation compel our admiration and in some cases our reverence. To behold their works is an inspiration as well as a delight, and to such masters we must turn if we

would get what pictorial art has to offer us of the sublime and the elevating.

An art critic recently wrote: "Pictures do still mean much to me that I make large demands on them. They must fulfil their own possibilities, must be something more than painted ma-

terials produced by the thousands of yards. One looks in them to find the individuality that will make a personal appeal, that will thrill one by the allurements of their invitation or by the depth of their suggestion to one's spirit, or it may be only by the master-

ful way in which they are painted. Whichever way it be, there must be a genuine note of strength or tenderness, the throbbing of a living organism, that sets a throbbing the life within one's self."

A picture that is worthy of being called a picture will bear, yea even re-



THE BLIND GIRL.

quires careful observation. The more we look at it the more we perceive in it. The oftener we look at it, the more its message, its beauty, its strength, will appeal to us. Like a favorite poem or song, the more often it comes before our notice, the more potent its

terials produced by the thousands of yards. One looks in them to find the individuality that will make a personal appeal, that will thrill one by the allurements of their invitation or by the depth of their suggestion to one's spirit, or it may be only by the master-

influence upon us, stealing unconsciously into our inner being—

"A thing of beauty and a joy forever."

As already intimated, mythology and history, the sacred and the secular, the symbolic and the real, high life and low life, Nature in all her varied aspects—morning, noon and night, mountain and plain, woodland and meadow land, the rolling ocean and the rippling stream, the howling storm and the peaceful calm, and animals of every

attention or elicits our admiration: the humanity element represented by the two figures, or the transcript of nature, the glowing landscape in which the figures are placed. It is an English scene in June. A thunder storm has just passed, and the blue black storm clouds still cover the sky in the distance. The landscape, however, is lit up by brilliant sunlight which reveals in its greatest intensity the rich green grass and heavy foliaged trees and the



IN TIME OF WAR.

kind, provide the artist with his subject. In the pictures chosen to illustrate this article we see how humble life appeals to three observers—the late Sir John Millais, P.R.A., Thomas Faed, R.A., and F. G. Colman, R.I.

In the sample from the brush of Millais we have a brilliant accomplishment in his Pre-raphaelite method. When studying the original painting it is hard to say which most attracts our

red brick of the houses in the distance, the hue of which is greatly enhanced by their striking contrast with the blue black clouds beyond. The simple sunlight, however, was not sufficient for Sir John on this occasion, for right across the storm cloud we have arched a double rainbow, the brilliancy of which carries to its highest pitch the scheme of color in the picture. As we look at it we instinctively recall Wordsworth's—

"My heart leaps up when I behold

A rainbow in the sky;

So was it when my life began;

So is it now I am a man;

So be it when I shall grow old,

Or let me die!"

Then we see the message of the picture—the blind girl. Unwitting of the beauty around her she sits with her back turned to it. She has never experienced Wordsworth's thrill at the sight of the rainbow; she has never joyed at the tender grass and the dainty wild flowers, here suggestively scattered in profusion around her resting place and nestling even at her very hand. With closed eyes, pensive content, and the natural trustfulness of the blind, she rests after her efforts to obtain a few pence from the charitably disposed in the town near by. Confidingly she clasps the hand of her younger guide, a mere child, who, also, though she has the power of vision, fails to see that, which, under normal conditions of child-life, should have sent her into an ecstasy. She "sees through a glass darkly." Want of the necessaries prohibits the enjoyment of the luxuries, even the luxuries of a free handed and bountiful nature. As is the rainbow in the sky to the landscape, so is the butterfly on the shawl to the humanity element. It is the finishing touch to the pathos of the picture. How exquisitely and completely the presence of the butterfly in this position expresses the inoffensiveness, the gentleness of the blind!

For attention to detail, the picture is a wonder. Every thread in the well worn homespun garments is manifest, every blade of grass and individual flower of the foreground is painted with extreme care, and yet the detail

is not over insistent, but is subject to the ensemble.

In the selection from Faed, "In Time of War," we have also the pathetic side of humble life dwelt upon. The picture is meant to tell a story and well it accomplishes its mission. The hopeless dejection of the mother with her "guide man awa," perhaps never to return, the light of life extinguished for a time, makes as strong an appeal for the abolition of war as do the blood and slaughter pictures of Verestchagin.

In turning to the selection from the works of Colman, we notice another aspect of humble life made manifest. This picture well might be paired with "In Time of War," and named instead of "One of the Family," "In Time of Peace." What an atmosphere of good natured contentment breathes through the whole scene! "One of the Family," just unhitched after his morning's work, expectantly intrudes his head through the open half-door. The generous matron gladly extends to him the expected morsel. The expression on the horse's face betokens the kindest of treatment from his master, and the existence of the best of terms between the two of them. The master at present is in the stable filling the manger with hay and oats, and at his call the horse will adjourn to his stall. The little girl, actuated by the same open-handed generosity as her parent, extends her mite to the welcome visitor, and soon will run to him with it. How true to life is the grandmother! No mincing morsels from grandmother's hand. And the boy! somebody says he is an element of discord in the sentiment of the picture. Not a bit of it. His attitude is the keystone to the arch; proof positive that what is repre-

sented is of daily occurrence, for what boy of his years would not jump excited from his seat when a horse put his head through the door of the dining room at dinner hour for the first time. No, depend upon it when he has that "chunk" in his mouth he will run out with the horse to the stable and take off the bridle and slip on the halter and then return with his father to finish his dinner.

Our cursory remarks on these three pictures from humble life should be sufficient to show that careful observation of a work of art, whatever its class, will teach us lessons, appeal to our emotions, develop our sense of the essentially beautiful, and give us pleasure equal to that to be derived from the perusal of our masterpieces of literature.



ONE OF THE FAMILY.

Standards of Country Life

BY J. B. REYNOLDS, B.A.

AT this present moment, there is no need in Canada more urgent than to maintain standards of excellence in country life. To hold what we have in this respect, and to improve these standards so far as possible, should be the aim of every reformer and of every public educator. I say to maintain these standards: for it will not be denied that the pioneers who have built for this land so firm a basis of prosperity and morality, have been men and women of brawn and brain and sound character. Any set of influences that tends to lower these standards of our forefathers, either by attracting away from the farm the brightest and the best of the boys and girls, or by working havoc upon the character of those that remain, must be zealously opposed; and any set of influences that tends to elevate the standards, must be carefully fostered.

Meanwhile the situation presents grave dangers. The influences that draw the youth away from the farm are every day increasing in power,—influences, too, that appeal to the energetic and ambitious. At the same time demoralizing influences have been allowed to work on ignored or unchecked. A current magazine has this to say on the question: "Except in the congested portions of our large cities where poverty, ignorance and vice walk hand in hand, conditions for the right training of a boy are more favorable (in the city) than in the rural communities, although we often hear the

opinion that the best place to rear a boy is on the farm. Such an opinion is not founded on an accurate knowledge of the relative advantages of the two places for rearing boys. The salvation of the city boy has been the object of our endeavors. That his country cousin, surrounded by all things which make for purity of thought and deed, needed salvation never entered our minds. We warned him against the 'wicked city,' with its billiard saloons and dens of vice, and we never dreamed that right out here under God's pure heavens we, through criminal negligence and shocking indifference, were subjecting or allowing him to be subjected to influences which would broadly pave the way to the very hell we desired to save him from."

Such statements as the above should not be made, or endorsed, unless they can be verified. I purpose to set forth those conditions in the country which, favorably and unfavorably, affect the standards of excellence in country life.

The first of these influences is Work: the work on the farm,—the length of the hours of work, the conditions amid which it is performed, and its rewards, as compared with the hours, the conditions and the rewards of work in town or city, are factors with all boys and girls who are free to choose whether they will work in the country or work in the town. It is not a question of work or idleness, or of work or play, says one of our sages: "We must all toil, or steal (howsoever we name our stealings) which is

worse; no faithful workman finds his task a pastime." It is a question of the conditions amidst which the work is to be done, and of the fitness of the worker to the task, that has to be considered. So far as the conditions are concerned, much is in the hands of parents to control. To make slaves of boys and girls, by assigning tasks that are much too hard and laborious, that fill their hours from daylight to dark, is to engender in early and tender years a distaste for the work of the farm that will inevitably drive them to seek more congenial and less exacting occupation, when the time comes for them to make a choice. A friend of mine, a very capable and energetic teacher in a Canadian college, told me that he acquired a distaste for the farm while still a boy attending the public school. In the winter, it was chores, chores, chores for every spare minute before and after school; and in the summer he was given a horse and a stoneboat, and it was stones, stones, stones unceasingly. Parents who want to drive their children from the farm, may do it thus most effectively.

And yet, this is not necessary. By the thoughtless and sometimes cruel, injudiciousness of parents, an impression of slavish monotony is imparted to farm work, that is not at all its true character. It is within the experience of all who know the farm intimately, that farm work has a variety and an interest that are altogether wanting to the same grade of work in town. When all the work of the farm is taken into view, it has not only a variety but also a pleasantness of surroundings that cannot be found elsewhere. Factory work and office work present, for the most part, the same dull round of duties from day to day, unchanging with

the changing seasons. On the farm there is endless change of demand on body and brain and will, that calls forth individuality, design, and resource.

Following is an extract from the current number of the Weekly Sun:

"Nor is there any more reason for the movement of young men from Ontario farms to cities. It is true the protective, bonus and subsidy systems give certain advantages to the cities as against the farm. But these advantages are for the few—the 'captains of industry;' the masses, the men who toil with hand or brain for wage or salary do not share in the plunder. For the vast majority of these the future holds no promise but a life of toil, the best that is to be hoped for being that the end may not be delayed beyond the period of earning capacity. The rewards of the average Ontario farm are better and surer than the rewards offered the average man in the city."

A second influence is Play; by which I mean recreation, amusement, diversion, anything that is done for the pleasure of it. A great many obvious remarks might be made here, remarks the truth of which would be apparent to everybody. It is obvious, for example, that there are many diversions common to city and country, games that require only time and space for their pursuit. And if the city boy has more time, the country boy has, or should have, more space and greater freedom for his games. It is also obvious that the city boy has many opportunities for diversion that come rarely to the country boy, or are denied altogether to him; the diversions of public entertainment that have to be paid for; and the kaleidoscopic and

panoramic scenes of the city streets. But what shall be said of the kaleidoscopic and panoramic scenes of sky and earth that roll and change before the vision of the country boy, if he have eyes to see? This, of course, is a matter of taste and education, as Brown ing humourously depicts when he makes one of his characters compare life in the city with that in a country villa:

What of a villa? Tho' winter be over
in March by rights,
'Tis May perhaps ere the snow shall
have withered well off the heights:
You've the brown ploughed land be
fore, where the oxen steam and
wheeze,
And the hills over-smoked behind by
the faint grey olive trees.

Is it better in May, I ask you? You've
summer all at once;
In a day he leaps complete with a few
strong April suns.
'Mid the sharp short emerald wheat,
scarce risen three fingers well,
The wild tulip, at end of its tube, blows
out its great red bell
Like a thin, clear bubble of blood, for
the children to pick and sell.

Is it ever hot in the square? There's
a fountain to spout and splash!
In the shade it sings and springs; in
the shine such foam-bows flash
On the horses with curling fish-tails,
that prance and paddle and pash
Round the lady atop in her conch—
fifty gazers do not abash,
Tho' all that she wears is some weeds
round her waist in a sort of sash.

Are the poets speaking common truth when they remind us of the beauties of nature, or are their utter

ances only feigning and frenzy? Is the appreciation of these things possible only to those of poetic temperament, or do the poets speak what common people feel? Is there truth, for example, in Whittier's 'Barefoot Boy'? Every word of that little piece should be read in this connection, but I content myself with quoting this:

"O for festal dainties spread,
Like my bowl of milk and bread,—
Pewter spoon and bowl of wood,
On the door-stone, gray and rude!
O'er me, like a regal tent,
Cloudy-ribbed, the sunset bent,
Purple-curtained, fringed with gold,
Looped in many a wind-swung fold;
While for music came the play
Of the pied frogs' orchestra;
And, to light the noisy choir,
Lit the fly his lamp of fire.
I was monarch: pomp and joy
Waited on the barefoot boy!

And what country-bred youth can fail to respond to the appeal of these words:

"The woods I walk in on this mild
May day, with young yellow-brown
foliage of the oaks between me and the
blue sky, the white star-flowers, and
the blue-eyed speedwell, and the
ground-ivy at my feet—what grove of
tropic palms, what strange ferns or
splendid broad-petaled blossoms, could
over thrill such deep and delicate fibres
within me as this home-scene? These
familiar flowers, these well-remembered
bird-notes, this sky with its fitful
brightness, these furrowed and grassy
fields, each with a sort of personality
given to it by the capricious hedge
rows—such things as these are the
mother-tongue of our imagination, the
language that is laden with all the subtle,
inextricable associations the fleet

ing hours of our childhood left behind them. Our delight in the sunshine on the deep-bladed grass to-day might be no more than the faint perception of wearied souls, if it were not for the sunshine and the grass in the far-off years, which still live in us, and transform our perception into love."

These, then, are the influences, well worth cherishing, that come to country youths at all times, but particularly in the wanderings of their leisure hours, and that help to form a taste and a character simple, natural, and pure.

A third influence is Society: and herein lies the greatest danger to the country youth. Not that country society is lower morally or in any other way than city society. The danger lies in the promiscuousness of it. In the city, for the most part, boys and girls keep with those of their own sort and age. They are protected against promiscuous mingling with persons of all sorts and ages. In the country there is little or none of this safeguard, and what horrors of iniquity and moral filth enter the mind of the country youth by listening to the conversations

in the corner store, in the blacksmith shop, and, yes, even at the church door! Every man bred in the country can call to mind the foul conversations that he heard in his youth among gatherings of men, unspeakable indecencies that perverted innocence and stirred up unholy imaginations. The country home itself is not free from this danger. Many a country youth, boy and girl too, has been morally degraded by the conversation of the hired man. The hired man, perhaps, is no worse and no better than the average man, but he is generally thoughtless of his influence, and often coarse and obscene in his language, and as a member of the household he is thrown in continual contact with the children of the home. It is criminal negligence on the part of parents not to protect their children from this, as well as from outside social influences that are likely to be evil. Of a country school that I attended when a boy, I heard recently that there were not half-a-dozen of the larger boys and girls in attendance who did not habitually use profane and obscene language. How can this be?



Scene on St. John River, New Brunswick.

The Taking of the Short Course to the Farmer

BY R. S. HAMER, B.S.A.

THE Short Course in stock and seed judging, held annually at the College in January, is an event which needs no introduction to the regular reader of the Review. Among the students of the College, especially those in the agriculture option, it is recognized as the two weeks in the

short courses during his college days, and the strongest evidence of the never failing interest of the event is found in the readiness of senior and junior students to "jump" other important lectures if necessary, in order to miss as little as possible of the discussions of the judging pavilion and in the Short Course class room.



R. S. HAMER.

winter term when live stock enthusiasts can indulge to the limit their fondness for the judging pavilion and when they can exercise and perfect their judgment in the placing of animals of all classes. To the Agronomy specialist the event marks a summing up of much information of great practical value and is appreciated accordingly. The graduate of the College sees four

The large attendance each year from all parts of Ontario shows that throughout the Province the immense practical value of a course of this kind is also recognized by the farmers. Of late years, the special knowledge of animal form required by the successful breeder, feeder and exhibitor of live stock has created a demand for information as to what is regarded as ideal conformation in the various classes and breeds of farm animals. In fact, if there is one point upon which farmers in general are willing to admit a weakness it is in the knowledge of what is regarded by the market as the best type in all classes of live stock. To have an ideal in the mind and to be able to see where an animal falls short of this ideal in any particular is almost essential to the handler of live stock, whether his business comprises breeding, feeding, buying or selling, or all combined. And yet the men in the country who have confidence in their own judgment in forming an opinion of an animal or in deciding between the relative merits of two animals, and who have the ability to back their

judgments by good substantial reasons, are surprisingly rare. Even those who are considered by the public as good live stock judges, and who frequently act in that capacity at our local fairs, are quite free in admitting that even in the classes in which they are considered by the public as good judges they are always learning something new. It is true that to a certain extent a good live stock judge is born, not made. At all events, daily association with stock is necessary in developing an eye quick in noting differences in form, and true in recognizing strong points and in detecting defects. At the same time this practice to be effective must have at the back of it more or less exact knowledge of what represents the form and type which the market demands. It is in supplying information of this kind that a stock judging course is of value. The two weeks' course which is put on every year at the College means much more, however, to those who are able to take advantage of it. It affords an opportunity to come in direct contact with the College itself, to become acquainted with the men whose life work has gone to making its reputation and to absorb in part at least the spirit which permeates the whole institution.

So thoroughly has the Short Course been advertised and so enthusiastically has it been lauded in the agricultural press and by those who have attended that there are few farmers in Ontario who have not heard of it. And yet even the record attendance of 328 farmers and farmers' sons in 1908 represents a very small proportion of the farming population of Ontario. In 1901, the total number of occupiers of land was 224,127. Allowing only one adult to each farm this means that for every

person who attended the short course in 1908 there were, at least, 700 farmers capable of deriving benefit who for various reasons were not present. Obviously even with a greatly increased attendance there will always be a great majority of our farmers who will never profit by the judging course at Guelph and all the associations incidental to its attendance. This fact may be partly explained by a lack of proper appreciation of the opportunities afforded. Only in part, however, for the distance, the expense involved and the absolute inability to leave home for even a period of two weeks on account of the scarcity of help explains the absence of a great many who would otherwise attend.

These latter reasons apply specially to the dairy counties in Eastern Ontario and account to a very great extent for the small proportion of each year's class registered from that part of the Province. It is particularly unfortunate that such is the case for the distance from Guelph renders June excursions from these counties also impossible, with the result that the majority of Eastern Ontario farmers understand the College and its work only through reports, newspaper articles and platform references at Institute meetings. To a certain degree these counties, as well as the more remote sections of certain Western counties, have in the past been isolated from the College.

During the past two years, however, a new feature of College Extension work has been inaugurated through the agency of the Farmers' Institutes' Branch of the Department, which if continued promises to be a powerful instrument in the overcoming of the effect of this isolation. This move

ment consists in the taking of the Short Course to the farmers, and has been brought about and made possible by a combination of circumstances.

The policy of specialization which is becoming the key note of Institute work, and which has revived interest where the Institute was popularly supposed to be dead, was undoubtedly responsible in the first place for the first steps taken in this direction. The establishment of District Offices under the charge of men anxious to popularize them, and to demonstrate their practical utility to the farmers made possible the enlargement of the idea and the carrying of it out on a more ambitious scale than had hitherto been possible. With a man on the ground, familiar with local conditions, in touch with local breeders, and with time at his disposal to complete all the details of fitting up a suitable hall, arranging for stock, conducting an advertising campaign, and looking after the general management of the course, the expenditure of the money necessary to make the event worthy of the name could be justified. In the various counties in which District Offices have been established, one or more of these Short Courses were put on during the past winter. These courses were chiefly three day events and included seed judging and the judging of horses, beef cattle and dairy cattle. Altogether between three and four thousand farmers attended, most of whom would never have received an inspiration of this kind had it not been brought to their very doors in this way.

Confining my observations to the two courses which came under my own direction in Perth and in Carleton Place, I only quote the verdict of the farmers themselves in saying that

no series of agricultural meetings held in either of these places for years has been so thoroughly appreciated. The attendance increased with each session and at both places finally taxed our accommodation to the limit. Intense interest was manifest throughout and the discussions among the farmers during the progress of the meetings and afterwards on the streets and in the farm homes indicated the new ideas which had been disseminated, the new purpose which had supplanted many hitherto hap-hazard governing principles, and the general stimulus which had been given to breeding operations and farm crop management. The success which attended the effort in both instances was due entirely to the fact that we had men of the first calibre—the leading Canadian authorities in their respective lines—to conduct the different sections of the course. With men such as Professor Zavitvitz and T. G. Raynor, for seeds; Professor Day and R. W. Wade, for cattle; and Dr. H. G. Reed, for horses; success was assured from the beginning. The confidence inspired by these men, added to the immense amount of information which they were capable of laying before their audience in a form readily understood and easily retained could not fail to impress even those who were attracted in the first place solely by the novelty of the event. Herein has lain the great value of the Short Course Extension work during the past two seasons and the purpose of this article is to emphasize the fact. The holding of a Short Course without the right men to conduct it would, in itself, be no guarantee of any great good being accomplished. It is the bringing of the people in personal touch with the men

whose ideas are founded on years of investigation work and whose outlook has been broadened by carrying on of work national in its scope and international in its importance that has counted for so much in making these Short Courses of value not only to the farmers but to the College itself, and which has created a new interest in progressive agriculture. These men who have made themselves the center of advanced agricultural thought, and whose opinion on any question impresses itself as that of a final authority exert an influence through the medium of these abbreviated Short Courses extending far beyond the influence of the courses themselves. The farmers with whom they are brought in contact during these events will hereafter find a new interest in bulletins, reports and newspaper articles appearing under the names of men who are no longer known to them only by reputation. Personal interest and appreciation is a very strong and enduring influence, and in this instance is bound to arouse a more intelligent interest in the College and its work, and will add untold weight to the ideas, opinions and conclusions emanating from it over the signatures of men whose personality has had the opportunity to make itself felt. Carrying with them the atmosphere and the spirit of the College to the remote sections of the Province, the heads of the Agricultural Departments can contribute more to a thorough understanding of the purpose of that Institution through demonstrations of this kind than almost any other agency at present in operation.

Short Course Extension work on the plans of the courses of the past seasons cannot be developed to an un-

limited degree, however. Regular lecture work with the student body claims its proper share of attention while the multitude of duties connected with the management of a big College Department and the numerous calls for assistance at Fairs, Conventions, and other public gatherings already crowds the time of the College Professors. It is not to be expected that they can undertake to conduct an indefinite number of Short Courses throughout the Province. Yet on the other hand, the rumor to the effect that the Province has been favored to a greater extent in this respect during the past winter than is likely to be the case again for some time will, if well founded be a matter of no uncertain regret. In view of the important function which these events can perform in the bringing of the College and its staff and the other people of the distant sections of the Province mutually in touch with each other, the question is raised whether a complete discontinuance of College assistance could be justified. Short Courses such as those of the past two years which are genuine outgrowths of the College Short Course have already found their place and the demand for them is bound to be keen. If this demand can be met with a few well placed events of first rank instead of with a multitude of smaller events conducted by men of only average capacity and experience, results of the greatest benefit to agriculture may be looked for. Otherwise a number of more or less successful imitations of the real Short Course may be confidently expected to take place at different points during the next few years. Instead of a last ing good being accomplished and a new impulse being given to progres-

sive agriculture, the result is more likely to be a satiation on an information diet of inferior quality which may ultimately be reflected in a falling off in interest in the College Short Course itself, and a decreased attendance. Criticism akin to that of some of the old order of Institute meeting because of the lack of superior qualifications on the part of some of the speakers may also be looked for. The farmers have acquired a discriminating taste in matters of this kind. They are thoroughly appreciative only of the

best. The question is can they continue to have in centralized points throughout the Province, even to a limited extent, the best and only true reproduction in miniature of the College Short Course. This is the most important point in the consideration of this subject at the present time, and the stand taken by the College authorities regarding it will determine to a very great extent the possibilities which the movement has in store for the farmers of Ontario, and also for the College.



TWO STURDY YOUNG CANADIAN FARMERS.

Spectres of the Plant World

BY HERBERT GROH, CENTRAL EXPERIMENTAL FARM, OTTAWA.

THERE are certain plants which may be met with in the course of a tramp through our woods and thickets which it pleases my fancy to think of, as spectres or ghosts in the plant creation. If I may be allowed to assume the possibility of meeting such elusive beings, I shall so speak of them at any rate. These plants, like true spirits of the woods, are often overlooked; but when discovered they never fail to arouse interest and wonder, from the strangeness of their appearance, and likewise of their habits, when these are learned. They are peculiar in being destitute of leaves or green foliage of any kind, such as we expect in any other flowering plant. Their pale, naked stems are clothed with only a few sparse scales, and it may be flowers or fruit; so that they are strikingly in contrast with their plant surroundings. Further examination shows that they do not even possess an ordinary normal root system, by means of which to forage in the soil. Instead, they are living, for a part of their career at least, attached to other plants, and are draining from other life streams than their own, the nourishment which they require. Plants with green leaves and roots for the honest manufacture of plant food, helplessly submit to the imposition, and apparently, if terror in the plant world were thinkable, they have as just cause for it as small boy ever had, slipping home through the woods after nightfall. It may be questioned

whether in either case the power to harm is as great as it appears.

In the present article I do not propose to attempt anything like a treatment of parasitism among the higher plants, but wish simply to call attention to a few examples of it which may be observed by any student of nature in Ontario. There are three families of plants indigenous to Canada which are particularly rich in parasitic genera, namely, *Orobanchaceae*, *Ericaceae* and *Convolvulaceae*, and these are all well represented by examples in this Province.

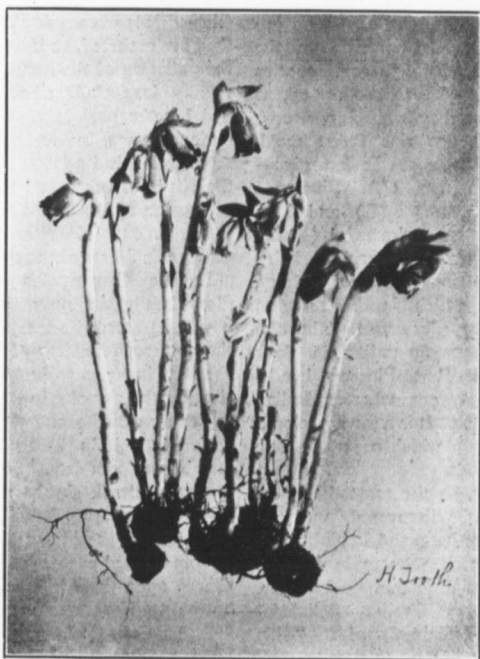
The first of these families comprises plants, none of which possess chlorophyll for the independent elaboration of plant food. They are root parasites on trees and other plants. When the minute seeds germinate the seedlings, which have neither cotyledons nor radicle, begin to grow downward into the ground, until, upon reaching a root of a host-plant, they fasten upon it. A sort of swollen or spongy rootstock soon develops, and from it the flowering stems arise later. The connection between parasite and host becomes so perfect that it is said to be difficult for even a skilled botanist to distinguish, to which the cells at the point of union belong.

Probably the commonest member of this family with us is the curious beech-drops—*Epiphegus*, or, in Gray's new Manual, *Epifagus*; literally, on *Fagus* or beech. It must be a familiar object to anyone who has ever been

much in beech woods. Beneath the wide-spreading links of those sturdy trees, where other vegetation has long since perished for lack of light, these plants are in their glory. Their brown, wiry-looking and freely-branching stems rise to a foot or more in height. They possess a few scattered scales, evidently pointing to an ancestry better equipped with foliage, and during late summer, purplish flowers are borne alternately along the branches, each in the axil of a little brad, and giving to the spike a zigzag appearance. The flowers are of two sorts; those which are uppermost have rather

attractive tubular corollas, while others lower down are smaller and seldom open, but are nevertheless the chief producers of the seed. By the time the plants have matured their seed they have become so like slender dried weed-straws that only a person looking for them would be likely to notice them against the brown background of the forest floor.

Other plants of the same family as beech-drops are squaw-root—*Conophelis Americana*, and broom-rape or one-flowered cancer-root—*Orobanche uniflora*. These are also to be looked for under trees, but are less commonly



INDIAN PIPE.

met with. The former is described in Spotton's botany as "a chestnut-colored or yellow plant, found in clusters in oak woods in early summer, 3 to 6 inches high, and rather less than an inch in thickness. The stem covered with fleshy scales, so as to resemble a cone. Flowers under the upper scales stamens projecting." Broom rape is a low plant, with stem almost or quite beneath the surface. It sends up a few naked scapes, each one of which bears a showy violet-purplish flower at its summit.

Passing next to the Ericaceae we have a family which is better known by its green plants, such as the huckleberries, blueberries and wintergreen, than it is by its ghosts. There are several genera, also parasitic on the roots of trees, although some species are believed to be to some extent saprophytic, as they have fibrous roots reaching into the rich forest mold. Chief among them are Indian pipe—*Monotropa uniflora* (L.), Pinesap—*Monotropa Hypopitys* (L.) and Pine drops—*Pterospora andromedea* (Nutt). The latter is a tall, purplish, hairy plant, with a long raceme of nodding white flowers, which is rather rare and occurs in dry pinewoods. The two first are not greatly unlike in their general aspect, but Pinesap has a number of flowers, whereas Indian pipe has but one. It is a tawny-colored and scaly plant, which occurs in pine and other woods.

Indian pipe, as the most likely of these three to be discovered, is worthy of fuller notice here, and I think I can not do better than quote in full the excellent description contained in Mrs. Catharine Parr Traill's delightful book, "Plant Life in Canada." "This singular plant has many names, such

as Wood Snowdrop, Corpse plant and Indian pipe. The plant is perfectly colorless from root to flower, of a pelucid texture and semi-transparent whiteness. There are no green leaves, but instead broad and pointed scales, clasping the rather thick stem, which is terminated by one snowy white flower. The flower when first appearing is turned to one side, and bent downwards, but becomes erect as it expands its silvery petals, these are five in number, stamens from eight to ten; stigma about five rayed; seed vessel an ovoid pod, with from eight to ten grooves; seed small and numerous. Though so purely white when growing the whole plant turns perfectly black when dried; even a few minutes after they are gathered, as if shrinking from the pollution of the human hand, they rapidly lose their silvery whiteness and become unsightly. To see this curious flower in its perfection you must seek it in its forest haunts, under the shade of beech and maple woods, where the soil is black and rich, and there among decaying vegetables, grows this flower of snowy whiteness."

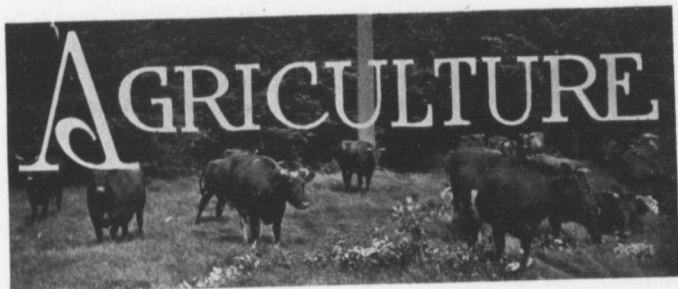
In the Convolvulus or morning glory family the only plants which have contracted the parasitic habit are the numerous dodders—*cuscuta*. When the host happens to be a plant of cultivation the parasite in some cases becomes a pest of economic importance, as for example in the cases of the flax and clover dodders. Most dodders, however, attack shrubs and herbs of little account agriculturally, and what ever damage the plants may suffer, is seldom noticed except by persons who chance upon them in swamps or river bottoms. Here one may sometimes find tangled thickets of vegetation where all manner of plants have been

bound together by the twining cord-like branches of their mysterious common foe. Unlike all the preceding examples dodder is a stem-infesting parasite entirely, and after the earliest period of its existence has no connection of its own with the ground whatever.

When a seed of dodder germinates on the damp earth where it has fallen, the embryo uncoils itself and extends one end, larger than the other, to the earth for support; while the other end, bearing the seed coat and reserve food, reaches up with a curious spiral motion for something around which to coil itself. Should its search be fruitless it can maintain itself for a while first by its stock of reserve food and then by transferring to the free upper end the substance of the anchoring portion which accordingly dies, but real self support it can hardly be said to exhibit. In the event of its finding a suitable plant at once, or before it has exhausted itself, the seedling promptly makes one or more turns about it, and with its free extremity continues to curve about in quest of other objects to which it may attach itself. Each portion of the stem thus wound about the host becomes swollen, and from it wart-like suckers or haustoria are developed. These haustoria fasten upon the plant and piercing through its tissues, extend bundles of cells into it, which establish a continuous union between the filament and the conducting system of the host as well as sending feeders into the surrounding cells.

When once such a connection has been effected the young dodder plant dies up to the first point of union with its host and beyond this it grows and branches rapidly, entwining all that comes in its way. Clusters of small, light-colored, bell-shaped flowers are eventually produced on many of the strands and are followed by round four seeded capsules, which are often so crowded as to form the most conspicuous feature of the plant in autumn, when its yellow, leafless threads have become dried and dead.

There are other seedplants besides the few included in the scope of this article which are at least partially parasitic in their feeding habits. They, however, possess chlorophyll to a greater or less degree, and in some cases are quite as green as though depending entirely on their own resources. Examples are the English mistletoe and some of the houseworts—*Pedicularis*. Among the lower orders of plants the phenomenon of parasitism is abundantly illustrated in the fungi. The problems presented to the student who seeks to trace the origin and meaning of what we have here been content merely to recognize are deep and fascinating. Our hasty survey of a part of the field should be sufficient though to point out the working of the natural law, which decrees that non use of organs and functions must react to the loss of their possession. In the plant world, as in ours, short cuts to prosperity are not conducive to the highest type of perfection.



Something About Rotations

BY J. H. GRISDALE.

THE true farmer will ever have two objects in view when managing his farm, to so manage as to gradually but surely increase the margin of profit and at the same time render his farm more productive. Many factors will necessarily unite to produce such desirable results, but of one feature we may be certain, there will be followed on such a farmer's farm a regular rotation of crops. For no other single practice in farm management can compare with this in importance. The rotation or rotations adopted will of course depend upon the line of farming followed, and to some extent upon the character of the soil and the physical peculiarities of the farm as a unit, but a rotation there will be.

Crop rotation means a certain succession of crops which regularly repeats itself each time the course is run. It really means further that the crops follow each other in such order as to insure each having such supplies of plant food of such a character as to aid in securing good returns from each particular crop.

Hence, in arranging a rotation, it is very necessary to have some knowledge of the food requirements of different crops and to know something of the values of the residues from the different crops included. Certain forage crops such as corn, roots, potatoes and hay require an immense amount of food for stem, leaf and root production, that is, an abundance of nitrates, as is found in clover or other sod turned down, and in well manured lands. Other crops, such as cereals, can get along best with a lighter supply of nitrates but need more phosphates, hence do well after some forage crop has taken up the superabundance of free nitrates found after sod. It is evident therefore that a good rotation will include (1) meadow or pasture, (2) root or corn, and (3) some cereal crop.

Various combinations of these three classes are possible, and the natural aim of experimental work with rotations will be to (1) determine the comparative values of the rotations as soil improvers and (2) their relative suits

bility for different lines of farming.

Five or six years' experience with a rotation of five years duration showed such remarkable results here, that in 1904 it was decided to begin an experiment that would include a variety of rotations. The aim was to get some data as to crop returns from and effect upon the soil of the different rotations under test.

With due reference therefore to the great principles already mentioned, and influenced further by the multitude of minor but nevertheless important requirements of profitable crop production, the following rotations were arranged, and are now being studied at the Central Experimental Farm, Ottawa:

A—3-year Rotation—(1) corn or roots, (2) grain, (3) clover hay.

B—3-year Rotation—(1) corn or roots, (2) grain, (3) pasture, (a) cattle, (b) pigs.

C—3-year Rotation—(1) corn, (2) peas and oats, (3) clover, all for soil ing.

D—4-year Rotation—(1) corn or roots, (2) grain, (3) clover hay, (4) timothy hay or pasture.

E—5-year Rotation—(1) grain, (2) corn or roots, (3) grain, (4) hay, (5) pasture.

F—5-year Rotation—(1) grain, (2) clover hay, (3) corn, (4) grain, (5) clover hay, pasture.

Rotation "D" is in triplicate. They differ thus: (1) deep ploughing, (2) shallow ploughing, and (3) used for sheep.

Rotation "B" is in duplicate, (1) pasture field used for cattle, (2) all crops used for swine, chiefly for summer feeding and pasturing.

Four other rotations were tried for some time. They included no hoed

crops, however, and had to be discontinued as it was found impracticable to keep the land free from weeds.

The treatment of the soil and crops, or the management of the different rotations may be summarized as follows:

A—First year—Manure 12 to 15 tons per acre applied winter, shallow ploughed in spring, well worked and planted to corn.

Second year—Oats seeded down, 10 pounds Red Western, 2 pounds alsike per acre.

Third year—Clover hay. Two crops expected.

B—(a) First year—Manured and handled as "A."

Second year—Oats seeded down, 8 pounds Red Clover, 8 pounds alfalfa, 2 pounds alsike, 8 pounds timothy per acre.

Third year—Pasture, cattle.

B—(b) First year—Manured in fall and manure ploughed in, well worked, sown to roots next spring.

Second year—Different grain mixtures suitable for feeding green. Different grass seed mixtures suitable for pasture and soiling next year.

Third year—Pasture, swine.

"D—Shallow ploughing," deep cultivation by means of a stiff tooth cultivator or subsoiler.

First year—Roots. Plough August, four inches deep, manure 15 to 20 tons per acre, work at intervals, ridge up in fall, roots in spring.

Second year—Grain seeded down, 10 clover, 12 timothy per acre.

Third year—Clover hay.

Fourth year—Timothy hay.

"D—Deep ploughing." Manure applied 15 to 20 tons. Land ploughed late autumn, 7 inches deep. Roots next spring.

Second, third and fourth years same as "D—Shallow ploughing."

"D—Sheep pasture. Crops just as in "D—Shallow ploughing," save that various mixtures of grain and grass seeds used testing their value for sheep feeding and pasturing.

"E"—First year—Land ploughed August, well worked, ridged in October, seeded next spring to oats and 10 pounds clover per acre sown, allowed to grow one year and turned under as fertilizer for corn.

Second year—Corn. Manure applied in winter or spring. Shallow ploughed, corn planted.

Third year—Grain seeded down, 8 pounds red clover, 2 pounds alsike, 10 to 12 pounds timothy per acre.

Fourth year—Clover hay, two crops expected.

Fifth year—Timothy hay.

"F"—First year—Grain, land ploughed previous autumn. Seeded down, 10 pounds red clover, 2 pounds alsike per acre.

Second year—Clover hay, two crops expected.

Third year—Corn, manured in winter, 20 to 25 tons per acre. Spring ploughed.

Fourth year—Grain seeded down to red clover, 10 pounds; alsike, 2 pounds per acre. Land fall ploughed after corn, very shallow furrow.

Fifth year—Clover hay, two crops. Late fall ploughed.

To compare results under such varied crop and cultural conditions is a rather difficult matter. The plan adopted has been to place an arbitrary and uniform valuation on all products and on pasturing various classes of stock. Following this plan the returns per acre have been about as follows, the average of four years' work:

	Per Annum.
Rotation "A."	
Average value of crop per acre.	\$26 44
Rotation "B" (a).	
Average value of crop per acre.	21 84
Rotation "B" (b).	
Average value of crop per acre.	28 78
Rotation "C."	
Average value of crop per acre.	29 30
Rotation "D" (shallow).	
Average value of crop per acre.	28 10
Rotation "D" (deep).	
Average value of crop per acre.	28 05
Rotation "D" (sheep).	
Average value of crop per acre.	20 95
Rotation "E."	
Average value of crop per acre.	24 95
Rotation "F."	
Average value of crop per acre.	25 23

The values placed on products were, roots or silage stored, \$2.00 per ton; hay, \$7 per ton; grain, \$1.00 per 100 pounds; oat straw, \$4 per ton; pasturing cows, \$1 per month; sheep and swine pastured, one cent per day.

In estimating cost of operation labor is charged at prices paid, machinery is put at 20 cents per acre, rent \$3 per acre, and manure at \$3 per acre. Net profits after paying all expenses were as follows, per acre, the average of four years:

"A" Net profits per acre.....	\$10 30
(a) "B" Net profits per acre....	6 20
(b) "B" Net profits per acre....	6 77
"C" Net profits per acre.....	11 00
Shallow "D" Net profits per acre	7 59
Deep "D" Net profits per acre..	7 43
Sheep "D" Net profits per acre.	3 48
"E" Net profits per acre.....	9 76
"F" Net profits per acre.....	9 56

Although the averages used are for four years the work has been under way really five years, and a study of the various rotations would lead one to remark upon them briefly as follows:

A—This would be a most excellent rotation to put into practice when sufficient rough land was available to serve as pasture. It is the rotation that would most likely supply the greatest amount of forage of the very best description for dairying or beef production. It is better suited for heavy than for light soils.

B (a)—This rotation would not be suitable for the average farmer, but might suit the man who had to buy rough forage.

B (b)—The area devoted to pigs (some ten acres), where this rotation is followed has given very satisfactory returns and would, I feel confident, prove profitable to any who tried it.

C—This is a rotation that can be recommended for use on a limited part of the farm adjacent to the buildings for use in producing forage to supplement pastures during the summer. Used in conjunction with "D" or "E" it has proven most profitable.

D—Shallow ploughing and deep ploughing, the same so far as crops are concerned are exceedingly well suited for the average farmer. It is likely, however, that on the average farm it would be necessary to set aside a certain area to use as rotation "C."

This four year rotation is capable of extension to five or six years. This may be done by leaving down in grass one or two years longer. Such a rotation is practiced in some parts of Quebec, and has given very good results.

The manure is generally applied just before turning to pasture when the rotation is extended to five or six years.

D—Sheep—The returns from this rotation are not strictly comparable with those from the others since many side experiments materially affect the results. It has, however, proven very satisfactory for this class of stock.

E—This rotation has been in use here for ten years and has proven to be most excellent where carefully followed and cultural operations well performed. Where all land was under cultivation, it would be found necessary to devote a certain area to soiling crops. It might be extended to six years by leaving down to pasture for two years instead of one.

F—This rotation has been fairly successful here, but for certain reasons not easily enumerated I do not feel as though I could either criticise or praise as yet and feel sure of my ground.

These rotation experiments have been under way for five years now. Three out of the five years have been what might be called "lean years" in the Ottawa Valley, hence these rotations can hardly be said to have yet shown what they are capable of doing in the way of influencing crop production.

The few facts given above are, however, strictly comparable each with the others, excepting possibly "D" sheep, where some rather disturbing conditions have been introduced.

The Bang Method of Handling Tuberculous Herds

BY G. E. DAY.

A MOST interesting pamphlet has been published by the University of Illinois entitled "Studies on Animal Tuberculosis." It contains a full report of an address by Professor Bernhard Bang, M.D., of Copenhagen, delivered at the International Conference on Tuberculosis at Washington, D. C., and gives a very clear idea of the views held by this distinguished authority, and the methods he has devised for eradicating bovine tuberculosis in Denmark.

The question of bovine tuberculosis is one of grave importance in every stock-raising country. Among stock men probably the breeders of dairy cattle are the most vitally interested in the matter, but every consumer of milk has something at stake, so that there are few people in the Province of Ontario to whom the question does not appeal.

Professor Bang works upon the principle that bovine tuberculosis is a contagious disease, and that healthy animals placed in a stable with diseased animals, are liable to infection, sooner or later. This point scarcely admits of controversy, as it has been demonstrated in many instances, as clearly as it is possible to demonstrate matters of this kind. As a rule, calves are born healthy, but if the uterus of the cow is affected, the calf may be tuberculous at birth. Such cases, however, are rare. Milk is a common

means of carrying infection. If the udder is tuberculous, the milk will likely contain the germs when drawn, but milk from a healthy cow, drawn in a stable where there are diseased animals, is liable to contamination from particles of filth which are almost sure to find their way into the milk, and which may contain large numbers of tubercle bacilli.

The tuberculin test gives no information regarding the location of the disease, nor the progress which it has made, and post-mortem examinations prove that most animals which react, but which do not show clinical symptoms, are only slightly affected; many of them so slightly that they might live for years, and, in some cases, recover.

From these facts, Professor Bang reasoned that the indiscriminate slaughter of reacting animals was a mistake. Cows which reacted, but which showed no clinical symptoms would likely produce healthy calves and should be retained for breeding purposes. Only those showing clinical symptoms should be slaughtered.

But a cow might not show clinical symptoms and might still be a menace to other animals confined in the same stable, and the only way to avoid this danger is to separate those animals which react from those which do not. Bang's system, therefore, calls for complete isolation of reacting animals.

Calves born in the infected herd are removed immediately to separate quarters, and are fed upon milk from healthy cows, or milk which has been heated to 80°C to destroy disease germs. For the first day of the calf's life it is fed the mother's milk raw, the colostrum being important to the welfare of the calf, but often the first day it is fed only the milk of healthy cows, or sterilized milk. Where practicable, there should be two sets of attendants, and the two herds should have nothing in common, separate implements and utensils being employed for each herd, and the herds should be kept separate when turned out to pasture. When it is not possible to have different attendants, then the herdsmen should always tend and milk the healthy animals first, and put on special overalls and boots before attending to the diseased herd. Instead of changing boots, a pair of rubbers could be worn over the ordinary boots when in the infected stable.

The most effective isolation can be had when the two herds are kept upon different farms. Next in effectiveness would be separate stables, but if neither of these methods is feasible, the stable may be divided by a tight board partition, with a tight fitting door. It would be better to have no door in the partition, provided it is practicable to have an entrance to each stable from outside.

The tuberculin test is applied twice a year, or at least once a year, to the non-reacting part of the herd, and any reacting animals are removed to the infected herd.

In 1892, Professor Bang received a grant from the Danish Government to enable him to test his method on a highly tuberculous herd. Upon the first application of the test, 131 animals

reacted, and only 77 failed to react. Most of those which failed to react were young animals. The stable was divided by a solid wooden partition, the reacting animals being placed in one part and the healthy ones in the other. Two sets of stable hands were employed, and the cattle were kept separate when grazing as well as in the stable. Nearly all the calves born in the infected division were found to be healthy at birth. They were removed at once from the infected stable and fed the first day upon the mother's milk raw, after which they were fed sterilized milk.

The "healthy" division was tuberculin tested every six months, and for a number of years a few reactions were obtained. Generally the percentage of reaction was very low, but on a few occasions it was as high as nine per cent. The slowness of the operation is accounted for on the ground that the farmer who owned the herd was not so careful as he might have been. Gradually, however, the numbers of healthy animals increased, and the animals of the reacting division were gradually disposed of until none of them were left. The farm now supplies "Milk for Infants" to the city of Copenhagen. The animals are tested every year, and under the last test, which was in 1907, not one out of 211 animals reacted.

The Bang system has been adopted on a great many farms in Denmark, and though a considerable number of breeders have abandoned it from one cause or another, those who have persevered have almost invariably obtained gratifying results. A few notable instances may be cited as examples.

On one estate in 1894, 139 animals

reacted, and 86 failed to react. In 1908, only one calf reacted, and that so slightly as to be regarded as doubtful.

On another estate, in 1895, the test showed 271 diseased and only 68 healthy animals. At present, only ten animals remain in the reacting division and only six out of 373 animals reacted under the last test.

On another estate, in 1895, 115 animals reacted, and 48 did not react. Under the last test only two out of 158 reacted.

On still another estate, in 1896, 166 animals reacted and 74 were found healthy. There is now a stock of 264 cattle, only three of which reacted in 1908. It is worthy of note that in this herd, one of the half-yearly tests showed 22 per cent of reactions. This was very discouraging, but, fortunately the owner persevered, with the success already noted.

In many other herds, large and small, equally satisfactory results have been obtained, so that the efficiency of Bang's system has been very fully demonstrated, when the person who undertook it exercised due care, and possessed the necessary patience.

Professor Bang also suggests a modification of the method which has been described. In cases where the owner has reason to suspect that a very large proportion of his herd would react to the test, he might prefer not to have his herd tested. In such a case he could isolate the calves and feed them sterilized milk. The young herd thus evolved would be tested every six or twelve months, and a new herd of healthy animals built up. This plan has been adopted upon a number of Danish farms, and has given most satisfactory results.

The Danish Government makes an

annual grant for the purpose of carrying on the work. Farmers who wish to adopt the method, and who will agree to comply with all its conditions, can have their herds tested free of charge. Provision is also made for partial compensation for animals slaughtered. With this assistance, the farmer is enabled to clear up his herd with a comparatively small expenditure of money, the cost for small herds of 25 to 30 animals being under \$100.00 according to the statements of several Danish farmers. The method involves a good deal of extra trouble, however, which is probably the main factor in hindering its more general adoption.

There are several points which stand out prominently in connection with Bang's system. It is a method adapted only to the breeder, since it calls for the renewal of the herd by breeding and rearing healthy stock. The dealer, that is the man who is constantly buying new animals, would scarcely find it practicable. It is necessarily a slow process, and the man who undertakes it must be prepared to exercise patience. It calls for unceasing care and vigilance, perhaps more than the average man can be expected to practice. It calls for the expenditure of more or less money, and involves a very considerable amount of extra labor.

There are certain facts, however, which should be considered in connection with the question. The problem of dealing with tuberculosis is attracting more attention now than it ever did in the past, and the chances are that it will attract more attention in the future than it does at present. In connection with the problem, the question of pure milk supply has received some consideration in the past, and is likely to receive more as time passes.

It is quite probable, therefore, that the dairyman who starts betimes to rid his herd of tuberculosis, may have reason to congratulate himself upon his foresight. In addition to this, the animals and products from a herd that is known to be healthy should command a premium over those from doubtful herds, and it has been demonstrated in Denmark that the cows retain their usefulness for a longer period in those herds which have been cleansed. Here, then, is some compensation for the expense and trouble which the operation involves.

The Bang system is not one which can be forced upon a people, but it calls for volunteers, and the Denmark Government encourages volunteers by giving financial aid. This is surely a wise use of public money, where so much is at stake, and is vastly more economical than the wholesale slaughter of reacting animals, such as we

have sometimes seen in the past.

Space will not permit of the full treatment of this subject, but enough has been said to give a reasonably clear idea of the Bang method. From results achieved in Denmark, we are forced to the conclusion that the method has great possibilities, and is worthy of full investigation. One thing is certain, it could scarcely be carried out without financial aid from the state, but the cost to the country would be a very trifling matter in comparison with the importance of the undertaking. Those of us who are interested in the live stock industry should make it our business to become fully informed regarding the practicability of the method proposed by Professor Bang.

In conclusion it may be noted that the Bang method has been tested in several American herds and the results up to the present are very encouraging.



THE AVENUE.

Experimental

Some Problems of the Corn Belt

BY H. G. BELL.



H. G. BELL.

A MAN'S needs are the upper most things in his mind—the nearest thing to his heart. The energies of his mental powers are continually centered on the solution of the problem of life's needs—the fertility of his inventive genius is constantly exercised in transposing or relegating the ever present cause of annoyance. So, too, the great heart of the nation is touched with the cry of want, the groan of exhaustion that rises from her great family, and the faculties of

her great mind, which is the consummate thinking powers of her earnest workers in all lines of endeavor—such faculties are incessantly called into play. The individual commonwealths, or states, or provinces of the great continent have their own individual needs, just as the different members of the family present their own peculiar requests. The Eastern States have their problem of depleted lands. Farms once fertile that now produce a pittance bordering closely on starvation. Especially is this true of the Southern States, and coupled with the great negro population question presents an obstacle for some Titan to remove. Crossing the Mississippi we find exigencies less severe, but problems nevertheless quite worthy of very careful consideration.

Nowhere on the continent has nature been more prodigal in the apportionment of her blessings in the shape of natural resources. The deep rich prairie soils of Iowa, Kansas, Northern Missouri, Eastern Nebraska and South Dakota and Minnesota are the storehouses of the accumulated riches of ages. No traveler, endowed with the common amount of sensible appreciation and sympathy can cross this tract of land from east to west and north to south without being deeply impressed with the great natural resources in the richness of the soil. The waving seas of golden corn, and well fed herds of fatted cattle attest the na

tural riches of these sections. But, these great resources, although rich almost beyond comprehension, are not inexhaustible. From many sections of the State comes the information that "my farm is not yielding twenty-five and thirty bushels per acre where it used to yield fifty and sixty bushels per acre." We inquire into the circumstances of the case and it is nearly always the same story,—“corn, corn for ten or fifteen successive years, or a rotation of oats and corn.” The great fund of that king-pin of the soil,—the humus, is fast becoming depleted. Where cattle and hogs are allowed to feed off the corn stalks and run in the pastures, these conditions are not so noticeable, but there is a large per cent of Iowa farmers who keep but few stock on their farms and sell their annual crop of corn and oats.

The latter crop finds its own peculiar difficulties to contend with in this region. A brief study of climatic records will show that in June and early July, when oats are filling and ripening, Iowa has its greatest rainfall and highest daily temperature. Scotland, the home of ideal oats, or Western Canada, have at this period their lowest rainfall, coupled with a daily temperature of moderate height. The adverse climatic conditions of Iowa usually result in a great scourge of rust early in the season, followed by a crop of oats weighing under twenty-four pounds per bushel.

The historic migration of Agriculture from the Eastern States to New York, Ohio and Indiana, from thence to Illinois, Iowa, Nebraska and Kansas has halted in its westward progress to a large extent. These latter States are now by far the greatest producers of livestock and cereals. However,

the very fact of their supreme importance, agriculturally, has been more or less detrimental to their true progress in things agricultural. The young eastern farmer of the '60s and '70s dreaming of the boundless freedom and almost limitless areas of his prairie home has come to experience the farming—or merely as it amounted to in some cases controlling thousands of acres where he used to farm fifty to one hundred acres in his native State. This time has passed for Iowa, and again the quarter section farm is largely in evidence. But what we wish to point out is that the very fact of the early farmers of these states and counties, experiencing as they did, the taste of things large and free, has led them to habitually “do things on a large scale.” This is by no means an unmitigated evil but it has been fruitful of at least two great evils. The farmer, inspired by his large ideas, has undertaken more than he could do thoroughly. His acquaintance with undertakings of such magnitude has, more or less, bred an apathy in him to the study of the sciences which underly good farming, and especially to study the application of these sciences. As a consequence, in many parts of the State we find farmers trusting in the abiding sufficiency of the soil pursuing practices in agriculture that show no appreciation of the principles that should underly a wise conducting of the occupation; and what is worse, practices which reveal no appreciation of the actual conditions which exist.

Coupled with these difficulties is the fact of the continuous rise in land values. Land in Iowa which fifteen years ago sold for \$50 per acre now exchanges hands for twice and three times that sum. Of course, the general

complaint of scarcity of labor is heard here, also. In an attempt to counteract these unwelcome and evil tendencies many things are being done. Speaking more particularly for Iowa, a generous campaign of education is being carried on. The agricultural press is indefatigable in its teaching of principles of soil tillage and crop management. The agricultural college, through its regular courses, is training specialists in the different lines of farming, who either go back to their homes to put in practice the principles they have learned or become teachers of the work. Perhaps through its extension work the college is coming into closest touch with the greatest number of farmers. By an organized system of fifteen Short Courses located in different parts of the State a series of study courses dealing with the special problems of the several parts of the State was conducted last winter. These were received with evident favor by the farmers and had a total attendance of over 4,000 young farmer men and boys, during the winter of 1908-09.

Soon after the harvesting of last year's oat crop it was evident that Iowa was approaching a crisis in the growing of small grain. A very small per cent of the oats of the State were heavy enough to grade Standard, and when farmers took into account the actual cost of production of the crop on land worth \$100 per acre they faced the fact that this crop was being grown at a loss of from \$2 to \$4 per acre, with money at 6 per cent. The Iowa Grain Dealers' Association applied to the State College of Agriculture for help, and the Extensive Department took up the cause. Many of

the railroads traversing the State offered to put on special trains and the offer was accepted. Professor P. G. Holden, Superintendent of the Extension Department, assisted by the staff of the Farm Crops Department, were the corps of speakers. The work was enthusiastically received in all parts of the State. Necessarily the work presented could not be of a very deep nature. The common principles of soil tillage and seed selection were emphasized. Choice of suitable varieties was advised, and as a result some hundreds of Iowa farmers are trying small areas of early oats in the several parts of the State this summer.

Much similar means were employed in the improvement of the corn crop, and the superior quality of the general corn crop of Iowa at the present time is the gratifying result of this work. Her Corn and Small Grain Growers' Organizations have been instrumental to no small degree, in hastening the application of the principles taught.

All these problems of agriculture are being carefully studied and honest efforts are being made to solve them. The question of "farming on a large scale" is finding its own solution in the farms being broken up into smaller holdings and farmed more intensively. Strenuous efforts are being made to make more effective the rural public school system of the commonwealth. The agricultural college is striving to carry the light of scientific agriculture to the darkest corners of the State. As the farmers are led to study the cost of production and maintenance of fertility, as well as the quantity and quality of the production itself, it is certain that a stronger agriculture will result.



ONTARIO FRUIT EXHIBIT, AT SUFFOLK FAT CATTLE SHOW, ENGLAND.

Horticulture

Ontario's Fruit Exhibit in England

BY P. P. FARMER, ONTARIO DEPARTMENT OF AGRICULTURE.

AS the majority of the readers of O. A. College Review are residents of our fair Province, and deeply interested in her welfare and progress, no apology is necessary for presenting to them information regarding the Ontario Government Exhibit of fruit and vegetables held in England in November and December, 1908.

The Royal Horticultural Society of London, England, holds, each year, at the end of November, one of its periodical shows, and at this time it invites anyone from the British Colonies to exhibit fruit or vegetables, fresh, in tin, or glass; nuts, tubers, etc. Exhibits to be awarded medals, prizes, etc., upon merit, and no domestic produce (that is grown in the United Kingdom) to be exhibited. This event is called "The Colonial Show of the Royal Horticultural Society," and is intended to afford visitors the opportunity of seeing something of the pos-

sibilities of the Colonies, and to increase interest in them.

In 1907 the Department of Agriculture procured some fruit which had already been shown at the Fruit, Flower and Honey Show in Toronto, in November of that year. This fruit consisted of about fifty boxes of apples, and ten boxes of pears. Arrangements were made with one of the Express Companies for transportation of this produce, and with the Secretary of the Royal Horticultural Show for the display of the fruit on its arrival in London. This fruit was the choicest of its kind, and although it had been exhibited once, would have reflected great credit on our Province had it not met with conditions in transportation which destroyed it. And even then the disappointment would not have been so great but for the fact that the partially decayed fruit arrived at the Exhibition Hall upon the opening day

of the Show, and the cases were un packed before the eyes of critical visitors before it became known that the produce was spoilt. No doubt one of the strongest reasons for the decision of the Minister of Agriculture to exhibit again in 1908 was to repair whatever damage the reputation of the Province as a fruit producer had incurred by the mishap of 1907.

In 1908 the selection and collecting of the produce for this Exhibition was



P. P. FARMER.

placed in the hands of the Fruit Branch, Mr. P. W. Hodgetts, chief of this branch, and Mr. T. B. Revett, his assistant being given entire charge of the transportation and the setting up of the exhibit. Mr. Revett, who selected and collected the produce, went with it to England, and the writer had the privilege of selecting most of the vegetables and accompanying Mr. Revett as his assistant.

In selecting the produce no pains were spared in procuring the very best

specimen in each class. In the case of fruit, particular attention was paid to uniformity of specimens in each package. In collecting the exhibits of fruit and vegetables many of the best growers in the Province were visited in order to get the varieties, quantity and quality required. Letters were written to many growers requesting them to keep any of the varieties required, with instructions how to pack them, and wherever it was possible some person was sent to do this work. In every instance, growers gave the department every assistance and co-operation in collecting and selecting the produce, and in some instances even gave us samples that they intended to show themselves at the different Ontario exhibitions. The collection of apples consisted of 250 boxes, containing about 85 varieties, including the following: — Grimes, Fallawater, Greening, Pearmain, Wolfe River, Gano, American Pippin, Pewaukee, Cranberry, York, Minkler, Ontario, Golden Russet, Baldwin, Spy, Stark, Scott's Winter, Ben Davis, Canada Red, Tolman Sweet, Western Red, Scarlet Pippin, Pomme Gris, Blush Pippin, Fameuse, Phoenix, Mann, Blenheim, Bellefleur, MacIntosh, Baldwin, Stark, Wagner, Baldwin, Seek, Salome, A. M. Pippin, King, Spitzenburg, Vanderveer and Wealthy. This fruit was procured from different sections of the Province including the North Shore of Lake Ontario, the Niagara District, and the middle Western Counties. In addition to the above mentioned varieties one grower supplied us with plate collections consisting of about one dozen apples each of about 40 varieties, which are not extensively grown, and which added greatly to the display of fruit.

Pears were procured chiefly in the District of Niagara, and at Burlington and Newcastle. They included the following varieties:—Anjou, Bosc, Clair geau, Flemish Beauty, Doodale, Hardy, Howell, Keiffer, LeComte, Louise Manning, Pitmaston, Seckel, Winter Nelis, Wilmot, Duchess, Sheldon.

Plums consisted of sample cases of Reine Claude and Monarch. The former variety only, stood the storage and voyage sufficiently well to permit of being shown.

The peaches consisted of two cases each of Elberta, Smock and Fitzgerald. Some of each variety were sufficiently well preserved for the exhibit.

Grapes consisted of the following varieties:—Agawam, Brighton, Catawba, Campbell, Delaware, Lindley, Moyer, Niagara, Vergennes and Worden.

The vegetables consisted of the following:—Artichokes, one variety; Brussels Sprouts, one variety; Cabbage, three varieties; Cauliflower, two varieties; Celery, three varieties; Carrots, three varieties; Cucumbers, one variety; Citrons; Egg Plant; Onions,

seven varieties; Parsnips, one variety; Peppers, twenty varieties; Winter Radish; Salisfy; Squash, two varieties; Potatoes, eight varieties; Turnips, two varieties; Vegetable Marrow, and Horse Radish. These vegetables were gathered from various parts of the Province, and some of the choicest potatoes came from growers in the Muskoka and Parry Sound Districts.

In addition to these fresh products, there were 50 cases containing preserved fruit in glass, jams and jellies in glass; canned fruits and vegetables were also taken. The whole exhibit was shipped from cold storage in Toronto, via refrigerator cars, and in cold storage compartment on board steamer.

The Royal Horticultural Society has a beautiful hall, centrally located in the City of London, which lends itself admirably to such exhibitions. Our fruit and vegetables arrived there in excellent condition, with the exception of Cabbage and Cauliflower, the leaves of which were frost bitten; in the case of the Cauliflower all the leaves fell off, but the heads were in



PORTION OF ONTARIO FRUIT EXHIBIT AT LONDON, ENGLAND.

splendid condition, and retained their delicate white color for at least six days after the cases were open. The fruit was set up in central location (see photograph) and two different schemes were made use of. One, the table and plate idea, similar to that which is used in our own local shows; upon this table we included a sample of every variety of fruit shipped over. The plates, of course, contained our best samples. The fruit was also set up in the boxes, as packed, with the wrappers of the top layer of fruit removed, and the boxes set at an angle to afford the best display. In this collection were included one or more boxes of the 90 varieties of apples and pears. The vegetables were displayed upon two different tables.

The only other Provinces of Canada exhibiting were British Columbia and Nova Scotia, and when all exhibits were set up, we had easily out-classed them; probably as far as quality and number of varieties was concerned Nova Scotia was our nearest rival, and British Columbia next. It was gratifying to see Canada so strongly represented by three such excellent exhibits. In short, the exhibits would probably compare as follows:

Ontario showing apples, pears, grapes, plums, peaches, vegetables, fruits, in glass, fruits in tins, and vegetables in tins. Nova Scotia showing apples only, and British Columbia showing apples and one or two varieties of pears.

From such a comparison it is easy to see where Ontario would naturally expect to stand in the awards even if we had failed to make the best possible display, but from the photographs submitted the reader will, I feel sure, conclude that we were not deficient in

that respect. At this juncture, however, it was learned that a rule of the society allowed only one award to an exhibitor winning a gold medal. A careful study of the prize list, both before and after this information was advanced, failed to disclose this rule, and so in absolute ignorance of it, all entries had been made in the name of the Ontario Department of Agriculture. Had this produce been shown in its several classes under the names of the different contributing individuals and growers, an award would have been made to each exhibitor upon the merit of the produce. Nova Scotia knowing this made the largest number of entries and was successful in securing the largest number of awards upon an exhibit of apples only, and of fewer varieties, and in no better state of perfection than were our own. British Columbia also made several entries in names of individuals and received awards for some of those entries.

Ontario, as she justly deserved, received the gold medal for grand display of fruit and vegetables, and the visiting public were entirely captivated by the exhibit, showing the greatest interest in it. The great variety of fruit and vegetables and the excellence of the preserved produce were so prominent in comparison with the other provinces as to be realized at a glance. Peaches and plums that had been transported two thousand miles and held in storage for twelve weeks were exhibited in their natural state. But perhaps that which attracted most attention in the fruit exhibit was the display of fresh grapes. In England grapes can only be grown with protection and are very costly, selling for 60 cents per

pound and upwards. Our grapes displayed with a card stating that these sold as low as two cents per pound retail at times, and that grape growing was one of our most profitable fruit lines, commanded immediate attention. In England only the rich can afford grapes, but the conclusion drawn from the exhibit was that in Ontario rich and poor alike could obtain all they

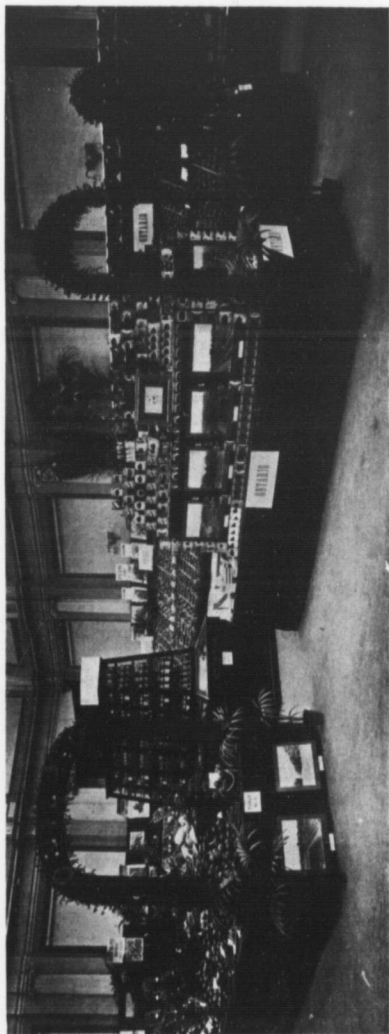
condition, as was also true of the celery. To my mind the condition of these two vegetables gave the best possible evidence of the care exercised in their packing and transportation. Nothing further need be said regarding the quality or appearance of the preserved and canned produce, except that a very attractive display was made with the same, the tins being



ONTARIO FRUIT EXHIBIT AT IPSWICH, ENGLAND.

wanted. The vegetable which attracted the most attention, probably because of its showiness, was the pumpkin. This vegetable does not seem to grow in England. Visiting horticultural students were much interested in the display of corn (called maize in England) which cannot be grown there. They also took great interest in the display of cauliflower, the heads of which were in such perfect

used to frame the pictures of Ontario landscapes. The photographs of Ontario farm homes and country scenes proved very interesting to the public, and after what the writer saw of the English landscape, it is quite reasonable to conclude that Ontario has many spots of beauty which compares most favorably with similar scenes in England though lacking, undoubtedly, the historic interest which pervades



Portion of the Ontario Fruit Exhibit, awarded the Gold Medal at the Royal Horticultural Society's show, London, England

almost every portion of the mother country.

It was decided that after the conclusion of the Royal Horticultural Show, the produce should be exhibited elsewhere in order to assist our immigration work. Accordingly it was divided into two sections—one-half being taken by Mr. Revett to Western England and set up, first, in Bristol, and afterwards in Exeter. The other half was taken by the writer to Eastern England and set up, first, in Norwich, second, at the Suffolk Fat Stock Show, and lastly in Ipswich. In all these cities the exhibits created the greatest interest, and although many English fruit growers claim that no imported apples were equal to the home fruit, still on careful inquiry it was discovered that most of their English grown apples would only keep for the early winter market, and that for the late winter and spring markets they have to depend largely on imported fruit. Imported fruit from other parts of the world was on display at various points during the time of these shows, and every opportunity was taken to compare flavors, keeping quality, and appearance with our own fruit, the comparison in every case resulting in favor of the Ontario fruit. In the opinion of the writer it was not excelled by either Cox's Orange Pippin or D'Arcy Spice, two of the most popular domestic varieties, nor by the Oregon Newton Pippin, the best imported apple. While this high standard of Ontario produce was fully appreciated by those in charge of the fruit it was equally gratifying to see how appreciative the visitors were of our display, and of our efforts to acquaint them with conditions of life on the farm lands of Ontario.

That Ontario can produce such excellent fruit affords considerable satisfaction, but it would afford greater satisfaction to the fruit growers of Ontario should the British public realize this fact to a greater extent, and show their appreciation by purchasing more of our better and higher priced fruit. There is no reason why Ontario apples should not command as high a price for dessert use in England as do the Oregon Newton Pippins. Many of our best varieties equal the latter and we have the advantage of Oregon by being several hundred miles nearer the British market, but Oregon certainly has the advantage of us in their extensive adoption and utilization of the cooperative principle of growing, packing and marketing their fruits. For a number of years they have placed before the public a supply of high-class fruit, uniformly graded and packed with the result that the buyer knows his packages by sight, and in buying them feels confident that he is obtaining first class fruit. Some of our most enterprising fruit growers have realized the

value of such methods and by their use are building up a reputation for their brand. The writer hopes that in the near future there will be more extended co-operation along this line so that Ontario fruit may enjoy the reputation it deserves. Such a reputation can only be obtained and maintained by the persistent and concerted action of our fruit growers. Do not let one package go to the market with your brand on that is not equal to or better than the best package which has previously entered that market under the same brand.

It was with no small amount of pride that we were able to show our fruit in such good shape up to the last. On the 22nd of December we still had pears and grapes as well as all varieties of apples in good marketable condition. Ontario has the fruit with the color, texture, flavor and keeping quality. Let her match this degree of perfection in production with better system in marketing and the prospects of her fruit industry will be materially enhanced.



THE O. A. C. REVIEW

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- S. KENNEDY, '10, Old Boys. MISS E. M. WHITNEY, Locals.
- C. M. LEARMONTH, '10, College Life. P. E. LIGHT, '11, Locals.
- C. F. BAILEY, '09, Business Manager.

Editorial

That the education afforded by a course at the O. A. College is steadily increasing in popularity, is set forth more decidedly by the fact that each year the number of applicants for admission is steadily becoming greater. In September, 1906, some eighty-seven students were enrolled in the first year; in 1907 the number increased to one hundred and sixteen, and again in 1908 there was a further increase to one hundred and twenty five. To keep pace with the increase in numbers, an extension to the east wing was erected in 1907, which afforded accommodation for forty additional students. This did not improve conditions greatly since during the College term 1908-'09 the residence was filled to overflowing, many students being forced to board at private

Education at the O. A. College

houses or wherever board could be secured.

Though the College is a Provincial institution, its fame has long since travelled not only throughout the Dominion but also to the foremost countries of the world. Men from every province of the Dominion, from Great Britain, the United States, Japan, Holland, India, the Argentine Republic, New Zealand, Australia, and other countries were enrolled as students during the past college year. In view of this fact we can truthfully boast that the course of study at the O. A. College still remains unexcelled by that of any other institution of a similar nature.

During the earlier years of its existence, the O. A. College had to struggle, as it were, for life. Through the efforts of those who had the agricultural interests of Ontario at heart, and

through the splendid work of the individual members of her staff, the College steadily advanced until she had gained world-wide recognition. It is a strange fact that from the date of her founding up to late years the Ontario farmers have not taken full advantage of the opportunities afforded by this institution. It is only of late years that Ontario has fully awakened to her agricultural possibilities and with the awakening is coming an appreciation of her College. The O. A. College is an institution primarily for Ontario people, and as such, should be used to the greatest possible advantage by them.

The education imparted here is broad and varied. Needless to say, the agricultural training is of greatest importance. There is no more weighty testimonial to the importance and worth of this phase of education than the results of the work and efforts of the graduates and diplomists who have gone forth from these halls to gain for themselves a livelihood. It is these men who appreciate the wealth of agricultural knowledge which it is possible to obtain; but the agricultural training is not the only source of education during the course. The study of Economics, English Literature, Public Speaking, and other subjects, the debates of the College Literary Society, the environment, the atmosphere of college life, all tend to stimulate and brighten the mind of the student, and to produce a man of more than ordinary ability.

The outlook for the term 1909-'10 is perhaps brighter than that of any previous college year. A large freshman class is already assured and the second and third years will be stronger than usual. Present indications certainly

predict a record attendance when the College re-opens on Wednesday, September fifteenth.

It was not with feelings of the utmost enthusiasm and pleasure that the graduating class of '09 gave up their quarters at the College on April 15th to the Normal graduates. To live for

The Normal Teachers at O.A. College

nearly four years at the College; to stand by it through thick and thin, and then, upon the eve of examination, be called upon to look for new lodgings, at a time when such are not easy to obtain, is not exactly intended to make the average man bubble over with feelings of unbounded joy. There is, however, a brighter side to the situation, and it is to this brighter side that we would have you turn your attention. To say that it is a good thing for our teachers to receive a course in Agriculture is not putting it strongly enough. Agriculture as a profession is at the present time the greatest profession in our country, and is receiving much attention, but we are confident, yea, very certain, that it is destined to become still greater and will receive the attention of every class of men. What better step can possibly be taken then, than to put the boys and girls of our rural schools in the way to receive instruction, hints and ideas which will interest them in this great calling. It will no doubt show them possibilities of the soil of which before they never dreamed. It will at least be laying the foundation for a further study of the subject for which a desire will have been formed in early life. This we believe is the time to begin to educate the boy to the farm, not back to the farm, because if

he begins the study in the right time he will not be educated away from it. Why should not our country boys be given right in the public school to receive instruction which will better fit them for their life work. This can then be followed by the Agricultural option in the High School. What better training for a boy who is to be a farmer than this? Educate him in the work he is to follow, not in things which will never be of use to him. To those who have charge of the boys and girls in our public schools we would strongly urge to put into practice, wherever possible, the lessons learned at O. A. College, and give the scholars a strong start in the right direction.

The articles contained in The Review from month to month, as a rule, have a direct bearing upon things agricultural. It is our intention to occasionally issue a number containing articles of a somewhat different nature. We believe it a good policy to present at times something away from the ordinary routine of things which will give us an insight into the various phases

**Educational
Number.**

of other realms of activity and thought. With this idea in mind we publish in this number of The Review several articles of an educational nature, other than those closely relating to agriculture. We are fortunate indeed in securing a contribution from President Falconer, of Toronto University. When a man of so many parts, with so many calls upon him, and whose time is so fully occupied prepares something for our readers we appreciate it very highly, and we feel sure that all our readers will likewise appreciate the profit which such a contribution affords.

What we owe to the United Empire Loyalists in the Matter of Education,

is the title of a very interesting Report recently gotten out by the Education Department of Ontario. The Report appears over the name of J. G. Hodgins, and is very well worth careful study. It tells of the pioneer teacher and gives many reminiscences of the teachers who followed these pioneers in later years. It may be had upon application to the Minister of Education.



Our Old Boys

W. J. Rutherford, B. S. A., Deputy Minister of Agriculture for Saskatchewan, has been appointed Dean of the Faculty of Agriculture in the new University of Saskatchewan that is being established at Saskatoon. J. Bracken, B. S. A., '86, accompanies him as Professor of Agriculture.

M. H. Wilson, who entered College in 1896, is now travelling for a fancy chinaware firm in Montreal. He visited College lately.

M. F. Coglan, Fellow in Chemistry at the College, has accepted the appointment as assistant to Dr. Hand of the Mississippi Agricultural College.

S. M. Galbraith, Agronomist in the Orange River Colony, has returned to Canada. He is farming in Alberta, specializing in the growing of high class seed grain.

M. H. Winter, of the '05 class, is still answering the call of the soil at Wicklow, Northumberland Co. Situated in the midst of Ontario's greatest apple district, Matt. is interested largely in fruit growing, but dairying and stock raising also engage his attention. He values his O. A. College course highly and hopes to complete his course within a few years.

Mr. G. I. Christie, after graduating from the O. A. College in 1902, went to Ames, Iowa, for a short time going from thence to join the staff of the

Indiana Experiment at Lafayette, Ind., as Superintendent of the Extension Department. Here he has shown marked ability as an organizer, and in originating methods of inducing farmers to farm more systematically and scientifically. Mr. Christie is certainly a credit to his Alma Mater.

Mr. A. Wiancko, B. S. A., '92, is also located at the Experiment Station at Lafayette, where he has charge of the plant breeding work. Mr. Wiancko displays great enthusiasm in his work, and is doing splendid work in connection with the corn industry. This industry is one of the most important in the State, and much is being done and much more still remains to be done in the way of improvement by breeding, selection and standardizing of present varieties.

The following are the names of the men who were in the O. A. College Football team of 1888. It is interesting to note how widely separated they now are, and how varied are their activities in so far as we are able to chronicle them:

Guy Pavnall—Ranching at Ft. Steele, B. C.

J. R. Rorke—Geological Department, Ottawa.

V. Price—Deceased.

E. M. Jarvis—Civil servant, 258 Jarvis street, Toronto.

H. Marsack—Veterinary Surgeon at Wanganni, New Zealand.

F. Marsack—Rancher at Millarville, Alberta.

T. B. Williams—Dominion Immigration Agent, England.

S. Ransom—Vet. Expert, Farmers' Advocate, London, Ont.

H. A. Morgan—Director of Experimental Station, Knoxville, Tenn.

M. Soule—Deceased.

G. C. Creelman—President O. A. C. College, Guelph.

P. Bayne—Farming at Beaver Creek, Alberni, Vancouver, B. C.

C. Orsman—Not known.

D. Smith—Not known.

J. Gelling—Not known.

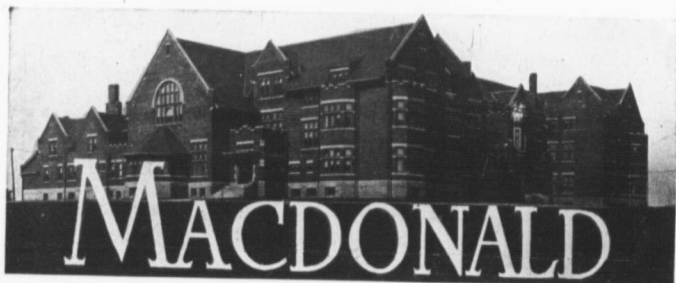


O. A. C. FOOTBALL TEAM OF 1888.

First Row—Guy Pawnall, J. R. Rorke, V. Price, E. M. Jarvis, H. Marsack.

Second Row—F. Marsack, T. B. Williams, S. Ransom, H. A. Morgan, M. Soule, G. C. Creelman, P. Bayne.

Third Row—C. Orsman, D. Smith, J. Gelling.



The Home

BY J. B. REYNOLDS.

ELSEWHERE in this issue appears an article entitled "Standards of Country Life," in which I have invited consideration of those influences which affect the standards of intellect and morality in rural society. As I have been asked to write something for these columns also, I have chosen to present here one aspect of the question, and that the most important and far-reaching, namely, the influence of the Home. The question particularly before us is, how to maintain the standards of excellence in country society, first, by saving to the farm some of its brightest and most capable sons and daughters; secondly, by controlling those influences that affect efficiency and morality.

The home is the most important of those influences because from the home proceed all these spiritual forces that make ideals and character. So little do we as a people appreciate *ideals*, and those forces that go to make ideals, that it may be worth while to place the chief emphasis there. Those things that boys and girls are taught

to look upon as worth *knowing*; those things they learn to believe are worth *having*; those things they are taught to regard as worth *doing*; that type of character which they learn to think it most worth while *to be*; these ideals of knowing, having, doing and being, have, or should have, their source in the home; and if we are to credit the testimony of very many great and good men, the chief source in the home is the teaching and the example of the mother there.

The question, then, resolves itself into this: what should boys and girls know, if they are to be kept on the farm; what may they reasonably expect to possess; and what principles of conduct and character should be taught.

Plainly, it appears, they should not be left in ignorance. With equal plainness, it appears, that there are certain kinds of knowledge, learned of schools, that is the common property of city and country,—the general branches of knowledge, so to speak. But what special knowledge should be imparted?

It is evident that the public schools, as at present constituted cannot be trusted to impart the special knowledge required by the boy and the girl that are to live on the farm. So soon as country taxpayers make up their minds to be liberal enough to pay for experience and skill as well as mere day labor in the schools, just so soon, and no sooner, may they look to the schools to impart something beyond the ordinary rudiments. Meanwhile the responsibility rests on the home. Here let me quote from a current magazine a few words that not only bear directly on the point, but also have behind them the power of a well-known name. Says Mr. J. J. Hill, head of the Great Northern Railway system:

"Inspiration of this character should be given the young in the home first; later, in the schools and colleges

I put emphasis, though, on the statement that a child's best education begins, if the parents know their business, in the home and not in public institutions. The farmers in all parts of the United States and Canada, whose children are satisfactorily developing their pioneer work on the farm, are those who began educating the child in the home as to the value of soil work.

We have at one point on the Great Northern system, a farmer who, ten years ago, had a son eleven years old, who frankly told both father and mother he hated the farm. He knew nothing of cities, but he had a desire to see them and live in them. The father and mother had many serious, private conversations over the boy's state of mind. They wished to do the best by the boy.

But here at home were 160 acres of land needing a successor to the father

to look after them, seven horses, five cows, some calves, hogs, sheep and chickens. All this data came to the industrial department of our system, because we make it a point to know a great deal about the capacities of the various farmers along our lines. A good farmer is one of the best aids a railway can have.

This particular farmer, after he had made up his mind that his boy could be converted into an excellent soil tiller, joined with his wife in a secret campaign against the lad's desire to go to a city. They didn't say to the boy: "You must do this and that." They didn't stick his nose down into a fur row and make him hold it there.

On the contrary, they began to brush up their knowledge about things and to increase their store of interesting facts. They bought books, papers and pictures and quietly led the boy into these. For instance, I know they made up a small but valuable library on soil analysis. The boy got into this, and all of a sudden he began to understand the reason why the crop yield of the lowland was different from that of the upland; why the black loam had a different producing value from the yellow, sandy patch.

He talked to his father a great deal about this, and asked many questions. The old man chuckled to himself, but was careful to give the boy the truth, and to make that truth just as fascinating as he could. You know you can give a boy or girl the truth in one way, and it will clog up their brains as dry, unpalatable bread chokes the throat. The same truth can be given with a trifle of legitimate color and with the intention of provoking further study, and the child will grasp it eagerly and push ahead.

This boy began to keep a book, and in it he made comparisons in figures between this five acres and that five acres, as to yield. He thought he would like to dip into chemistry—applying a knowledge of chemistry to farming. Father and mother heartily encouraged him in this. The wonders of nitrogen, that great, living, doing thing of all food and life production, suddenly dawned upon him.

Some years later this boy's father said: "When Billy began to understand chemistry, when it broke in on his intelligence that brains, knowledge and farming had a big connection, that stupidity and dullness have nothing to do with the farming that pays, he blossomed out like a corn patch after a good rain. He came right into his own. He experimented on mother and on me, on everything there was on the farm. He made big blunders and he had to pay for them, but all the time he was getting himself disciplined and adding to his knowledge. When he was seventeen years old he could run that farm. And he did. He went to the city once a year to take some of the rough edges off himself, but he came back home every time a better man and farmer."

Education of any kind, knowledge in whatever branches, will inevitably cause the conditions of many a farm home to seem distasteful to the boy or the girl. Enlarge the mind, widen the vision, cultivate the taste, as you can not help doing by any process of education, and you make a new creature with new desires. And this is why so many girls and boys, whom their parents have been ambitious to educate, leave the farm; either that during the process of acquiring education they have imbibed false ideals of material

surroundings; or else the home is bare and unlovely within and without, devoid of books, of conversation, of recreation. Plainness and even poverty may be endured, but ugliness and dullness not. A woman with the will and the taste can work wonders in beautifying and enlivening the country home.

Flowers spring to blossom where she
walks,

The careful ways of duty;
Our hard stiff lines of life with her
Are flowing curves of beauty.

Our homes are cheerier for her sake
Our door-yards brighter blooming,
And all about, the social air
Is sweeter for her coming.

It seems to me that in the farm home should be born a wider and nobler vision not only of the dignity of farming, but also of its serviceableness and its possibilities. The world is fed by the farm. Wealth in its divinest form is produced there. The highest ideal of Christian conduct is service, and to accept the work of producing part of the world's food is to realize that ideal of conduct. This ideal alone, however, high and worthy as it is, is not sufficient. To it must be added a measure of assurance that the material rewards will be sufficient to maintain right standards of living. Here I may again be allowed to quote the homely and forceful words of J. J. Hill;

"All our national census reports, school statistics, commercial reports, show that the cities are crowded with boys and girls who earn little and produce less. Suppose their parents of the country life had gone at them this way at the time they were first thinking of work,

"You can earn in clerking, in the factory or the shop of the city, at your present age, not less than \$20 a month, not more than \$60 a month. You will have long hours in bad air, your food will be insufficient, you will live in stuffy quarters, you will be in fierce competition with thousands of others; if you win, it will be only after long years of brutal work; you will be working where the world really does not need you.

"But now, my boy, here is an acre of land. It will cost each year to keep it up and make it produce, three to five dollars; according to your intelligence

in handling it, you can make it pay above cost from twelve to one hundred dollars. Every acre you add to it and treat the same way will increase the profit. You will live in the sunshine and air. You will have big muscles, big sleep, and big appetite. Your land will give you most of your food. You will live with and ride behind horses. You will have cattle and fowls earning for you all the time. You have only to put energy and intelligence into this work, and, instead of being a slave in the overcrowded city, you become a king of acres, a producer for the whole world."

A Trip Through the Trossacks

BY G. M. TORRANCE.

THE TROSSACKS—teeming with the storied charm of history and romance, with scenery so varied—so exquisite, so rugged, so sublime—with human memories haunting every foot of the soil, every dark recess in the defiles, every craggy cliff or rolling hill—one can hardly repeat the word without a feeling of exultation.

Many, many times, have I been asked, "What part of your entire trip did you enjoy most," and I have as many times replied, Edinburgh is beautiful, London glorious and fascinating, Killarney and the Gap of Dunloe, lovely beyond description, but the Trossacks hold me in their spell.

My pen seems so inadequate to fully describe the varied emotions one feels in passing through scenes, made immortal by the late Sir Walter Scott in

his masterpiece, "The Lady of the Lake." For natural loveliness of scenery and unfailling charm, there is to my mind, nothing to surpass our trip through the Trossacks, in our entire itinerary. Leaving Glasgow shortly after lunch on a balmy summer's afternoon, we pass through a beautiful country whose rolling hills, cultured fields and flower decked lawns, would beguile the tedium of any journey however long. Arrive at Balloch Piers, at the head of Loch Lomond. The little loch steamer waits, puffing and impatient to carry her passengers to scenes of beauty heretofore undreamed of. We catch a glimpse of the placid blue waters, sparkling in the sunshine—but our guide is calling to us to "make haste" and secure a good seat on deck, and we hasten. Soon we are steaming on our way.

And this is really Loch Lomond, sung and adored by poet and peasant. Oh! if these bright waters could speak, what tales of love, and war might they unfold. Little Canadian girl—you are surely in a dream.

For a short time we are content to sit on deck, but soon we push our way to the bow of the boat and the grandeur of the scene bursts upon us.

Swiftly and surely we wind in among the verdant hills, now wending our way in narrow passes, between



A SCENE IN THE TROSSACKS.

islands so small and yet so beautiful that one would think some mighty hand had plucked a bunch of rare green foliage and set it in the clear, cool, refreshing waters, there to live, to lure to rest and to revive the soul of every beauty lover.

The billowy hills on either side, a bower of trees, so close together, lap ped and overlapped, as feathers in a fine plumage overlap each other and blend in one soul resting harmony.

Every mile of the loch shore has its story. Balmaha, where the steamer touches first, keeps its own memories in Rob Roy, who thought his stolen cattle safe once they were "abune the pass."

The islands through which the steamer threads its way, sleep now amid the lapping waters, but they were the scene of carnage once, when Hakon's Lieutenant, Magnus of Man, swept upon them from Tarbet and put to sword the clansmen who sought refuge there.

Glenfruin also, of the western shore, has its place in history for the fight in which the MacGregors overwhelmed the Colquhouns. In return sixty Colquhoun "widows" flaunted bloody shirts before the King at Edinburgh and letters of fire and sword went out against the luckless Clan Gregor.

Glenfruin, however, the seat of the chief of Colquhouns, remains here yet by the shore and just beyond lies the little Colquhoun village of Luss. I cannot picture a more exquisite spot for a summer's outing than this quaint little village of Luss.

The tiny whitewashed cottages nestling at the foot of the hills, remind one of miniature play houses, the low overhanging roofs, the climbing vines and bright bursts of blooming flowers, make a fairy picture and it is with a lingering sigh of regret that I feel the boat pulling away from the pier and turning to the right I behold Ben Lomond.

Unconsciously almost, we are singing "By Yon Bonny Banks and by Yon Bonny Braes," and aye they are bonny.

There is a foot path clearly visible to the top of Ben Lomond and great patches of purple heather bell, give a

softening touch to its ruggedness. At the foot of Ben Lomond is a larger inviting inn, Rowardanen. This was the place so unjustly maligned by the inn album scribbler, in his notorious spasm of poetic genius.

Your salmon are so fat and red,
Your fowl so lean and blue
Show which by Providence were fed,
And which were fed by you.

Needless to say, the libel is quite baseless, and no more charming spot could be found for an angling or climbing holiday or I might add for the benefit of prospective honeymooners, for a honeymoon.

The steamer sweeps on. The rocks to the right are Craig Royston, the patrimony of Rob Roy. His prison is pointed out among them and his residence was just beyond. Here it was that Wordsworth saw his Highland girl and sung her charm.

"Sweet Highland girl, a very shower of beauty, is thy earthly bower."

The place, however, had seen less peaceful times. In the narrow glen above, the Government built a fort in 1713 to awe the clansmen. But it did not awe Rob Roy. It was surprised and dismantled in turn by himself and his nephew. The garrison as the spot is still called, is said to have been commanded at one time by General Wolfe, the conqueror of Quebec.

At Inversnaid we leave the boat and here we get our first glimpse of a touring coach. The red coated driver and bugler add a bright touch to the scene, the quartette of big powerful horses are pawing to be off.

Laughingly we climb up the narrow ladders into the coach, a crack of the whip, a last lingering look at lovely

Loch Lomond, a turn in the steep hill, and it is lost to view. We wind along for four miles through a road of elf land beauty. High on one side are the purple covered hills and far below spread the broad beautiful valleys.

We pass Loch Arnet, at the foot of which stands the house from which Rob Roy carried off his bride. There's a curve in the road, and, hark, what a sweet strain is borne on our ears. It is the sound of the bag pipes, playing among the hills. The strains grow louder, we listen breathlessly, our hearts and brains surging with the wild beauty of the scene and the romantic surroundings.

At last the piper comes in view, not a proud haughty chief, but a poor piper who earns his livelihood from the thousands of tourists who pass his way each season. We throw him pennies. Two little girls follow to pick them up. The coach creeps along. The piper follows for a short distance, then turns playing all the while. We listen until the last note dies away. Never again will we hear the bag pipes with out the memory of that scene confronting us.

We can understand too as never before only the sound of the bag pipes will stir the blood of a Scotchman to boiling point and call forth from him a fire of pride and patriotism which the river of Time will never quench.

The coach bowls along at a merry clip, until a drop in the road brings us to Stronlachar, on the banks of Loch Katrine. The terraced Highland Hotel is full of gay clad tourists and as busy as a cafe of the boulevard, but the stir is confined to its terraces and ground alone, and all around rises the wild solitude of the hills.

Involuntarily one says with the psalmist David,

I will lift up mine eyes to the hills,
From whence cometh my help, oh God.

No one with a spark of poetry in his nature could help being moved by such sublimity. All nature is truly in tune with the Infinite. After all

The Infinite always is silent,
'Tis only the finite speaks,
Our words are the idle wave caps,
On the deep that never breaks,
We may question with wand of science
Explain, decide and discuss,
But only in meditation, the mystery
Speaks to us.

There is the usual rush for souvenirs, postal cards, etc. We hastily address one to mother and then find we have time for a short walk around the grounds, over the pebbled paths and in among the thick flowering shrubs. Strange to say, the Stars and Stripes, the American flag, is flying on this Scottish hotel. My patriotic blood is up in arms in an instant and quickly I find an English guide and demand of him the reason for this. He quietly assures me that the British flag is worn around the hearts of her people, but when necessary other nations can see it readily enough. After all, it must be a sweet welcome and a touch that will endear every tourist from Uncle Sam's land, to the heart of Scotland, to see the Stars and Stripes flying in a country far across the sea—a country that has the wisdom of ages behind it, a country that was bred on the food of patriotism, yet renowned the world over for its unfailing and charming hospitality.

Another loch steamer significantly called the "Sir Walter Scott," is waiting to convey us up through Loch Katrine. The boat quietly glides westward through a panorama of still more vivid fame. Deep and pellucid and cool, these waters form in a peculiar sense a fountain of life. At the right hand as the steamer descends, appears the arch of the channel by which the loch waters are drawn away through the mountains pouring their crystal purity into the very heart of the city of Glasgow.

Here a leafy bower reflected in the water, lies Ellen's Isle, the caterous pastures of bygone centuries, which Scott has pointed as the refuge of the banished Douglas and his daughter The Lady of the Lake. On its shore may still be seen the "blighted tree," against which the harper leaned, and opposite still appears a remnant of the Silver Strand.

The beauty of Loch Katrine lies chiefly at its eastern end. Between the steep sides of Ben Venne and Ben A'an, the loch narrows and darkens, until under the hanging woods which shadow its loveliness, it ends and literally fulfills Scott's description,

"A narrow inlet, still and deep,
Affording scarce such breadth of brim
As served the wild duck's brood to
swim."

We land at a rustic pier clinging against the mountain side, mount on other coach and quickly roll away by the winding road, through the basky Trossack mile, where Fitzjames in the poem saw his gallant grey drop dead, and along the strath by shores of the lovely loch Archray.

Every spot may be identified with

Scott's poem. Words fail, we can only gaze and drink in the beauty that has opened to the eyes of the world, the secret charm of Scotland. Over the hard smooth stone road resembling nothing so much as a broad white ribbon, we go, the clatter of the horses' hoofs and the occasional explanatory note from our guide alone breaking the silence.

Hill after hill in robes of emerald velvet embroidered in purple heather bell, melts away from our eyes, past dusky defiles, under shaggy overhanging rocks, over rustic bridges, through a leafy bower of trees, past moor and rivulet we go, from scene to scene of fitful changing beauty. A bend in the course brings to view the famous Trossacks hotel, resembling some old stronghold, and which has fittingly been called a living monument to the late Sir Walter Scott.

I remember so well that after passing this spot the temperature seemed to change—a soft mist like a purple bridal veil settled down on the hills—the solitude was almost overpowering. In a field near the road, away from its shepherd's care, lay a dear dead lamb. I longed to get down and cover it. But, in the distance, two strange figures appeared. Am I laboring under some strange occult powers or are they not the witches of the caves. Steadily they plod on, weird and uncanny, clothed in black, their short skirts coming scarcely to their boot tops, their shoulders bent 'neath the weight of a great load concealed by a short black cape, a high pointed black hood completes the grotesque

spectacle. Never varying in their course they file along, looking neither to the right nor left.

The coach is upon them, unheeding they continue on their way. We peer into their faces, almost fearful that we may really catch a glimpse of them, but so cleverly are they concealed that not a soul has the faintest idea of what these strange weird creatures are. It doesn't need a very vivid imagination to call up the visages of the witches of childhood's fancies, however, and a chill falls upon me as I wonder who and from whence came these two strange figures.

Our Scotch driver with a wave of his hand points out the Brig o' Turk, but he is speaking in the vernacular of course, and I was forced to bring my imagination into play again, to determine really what the kind hearted Scot was expressing.

We sweep along the brow of the mountain, down the steep winding road into the quaint little village of Aberfoyle. Our coach makes a fine turn and stops with a flourish at the Baillie Nicol Jarvie Inn.

A banging of pans, the proprietor rushes out to greet us, just as though he wasn't expecting us all to dinner, and despite the chill of the drive we are warmed by the glow of the true Scottish welcome. But

Of all the beautiful pictures
That hang on Memory's wall,
That one of my trip through the Trossacks,
It seemeth the best of all.

Some Glimpses of Southern Spain

BY FLORENCE A. SHURLY.

THERE are several ways of going into Spain. Perhaps crossing from Gibraltar to Algeciras, at the south is nearly as interesting and easy as any.

Gibraltar deserves some notice for its picturesqueness, as well as its military wonders, but I only want to tell you a little about its half Spanish aspect. The town is built on the side of a hill as everyone knows. The streets are mostly steep and narrow, the residential part being, in some cases, mere flights of stone steps. The houses are chiefly rough caste, painted every color of the rainbow, and the roofs are of red tile. The huge overhanging pepper trees, give the finishing touch to this rather pleasing mass of color. The many Moors in native costume one meets in the streets, rather add to the quaint effect.

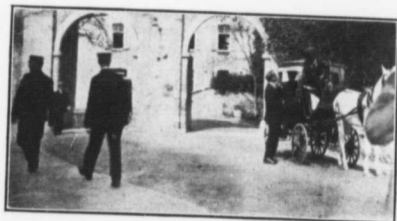
Mules are used almost entirely as beasts of burden, the chief public carriage being a four wheeled affair called a Victoria, and said to hold four people. But three, if more than sylphlike, would have their own troubles making themselves comfortable.

The town proper is walled in and practically under military rule, so, of

course, when the sunset gun is fired at 6:15, the gates are closed and no one is allowed to pass without special permission. All the gates are more or less interesting; the old south gate anyway is worth a visit. It is quite plain, but its massive stone arches, surmounted on one side by the Spanish coat of arms and on the other by the English, lends a certain amount of dignity to an entrance of this great military stronghold. Gibraltar is fairly clean. Indeed an old driver we had considered it a rival of spotless town, and told us with great distress that it was so clean they were no longer allowed to have the pigs and chickens live in the house with them.

In going to Spain you take the ferry from Gibraltar to Algeciras and there get your train. Algeciras is a fashionable Spanish winter resort, and quite worth a visit, if you are not pressed for time.

The Spanish trains are much like the English; the compartments are very comfortable. But the mere fact of actually being in Spain, if it is for the first time, lends a charm to the smallest thing. To everyone and everything time seems no object. The trains start



OLD SOUTH GATE, GIBRALTAR.

mostly when they feel like it. They blow a funny little horn, much like the fishman's horn here, to let you know they are thinking of leaving, and when you hear a queer sort of cow bell you know they intend to stop soon. The trains in the south are truly Spanish, and only amble. But you readily give them; there are so many things of interest to be seen along the way. There in red sashes and gorgeously dirty velvet trousers, ploughing with queer wooden ploughs, washing hanging on every bush or hedge, the Spanish women, both of town and country, seem to be always washing, and indeed you don't wonder when you see the filthy streams they use as tubs. These are usually running down a hillside. Spain is very mountainous. The woman at the top has the best of it. As the poor unfortunates farther down have to use this water in its degrees of dirtiness as their turn may come. So you quite agree with the last one down the line that it won't hurt the clothes much to be put on the gutter stones or the street pavement to dry. Our first stop was Ronda, a small, quaint little Spanish town, perhaps most noted for the Toga, a wonderful rent in the hillside, 350 feet deep, and over which Don Jose Martin flung his one-arch span 150 years ago.

From Ronda we went to Cordora. Here the great Moorish mosque claims the most attention. We were charmed with its Moorish beauty. But annoyed to think Charles V. could not keep his fingers off even this, but must needs spoil the whole by building his Roman Catholic Church inside. Even because of the carving in the choir one can't quite forgive him for putting it just there. But his statue in the wonderful shell room of the mosque itself is even

more unforgivable. He might, we think, have left this gem of Moorish workmanship, with its carved alabastos and richly tiled walls, intact, so we could for a little while at least imagine ourselves back in the sixth century, when this wonderful monument of the Moors was first given to the world. This little room is considered the finest in the whole mosque. Its name is derived from the shell-like ceiling, and it was originally used as a prayer room.

But it seems we cannot forget Charles V. wherever we go. Even the world-famous Alhambra at Granada, he did his best to spoil with the modern palace, commenced by him in the very grounds of the Alhambra. But his successors didn't quite equal him in bad taste, so it was never finished.

The Alhambra could not be completely spoiled by anything. Indeed there are few places can give to the world a more interesting or varied history. Its hall of the Ambassadors, Court of Lyons, Court of Myrtle, and numerous other courts can hardly be excelled in their fine details of carved alabastos and examples of Moorish architecture, and oh, for many things they are wonderful, and to see the Alhambra in moonlight might well be considered an event of rare importance in one's life. A description of the Alhambra could be made endless, but I am afraid not short, so I will leave it undisturbed in its grandeur, and tell just a little bit of the entrance and approach. The grounds are guarded by an old Moorish gate, belonging to the tenth century. It is surmounted by the hand of justice, the emblem of the Moorish creed. It is just as solid and forbidding to-day as when built, and forms a veritable bull-dog watch for

the Alhambra. Passing through this gate we enter the beautiful Wellington avenue, so called because the trees were planted by the Duke. It is a truly suitable approach to this, one of the seven wonders of the world, and makes a splendid background for the old gipsy king who daily comes in full regalia that the travellers may take his picture; and it is well worth the one or two pesetos to have as a souvenir of this old veteran of Granada.

Granada is wealthy in places of interest besides the Alhambra. The old gipsy camp deserves a visit. The huts

sponge cake called locas, that is very good, and another the mostachones, big, round and nice. What else I don't know. Nor do they forget to quench your thirst. Along the road you can buy goats milk at nearly every stopping place. The milkman is a great institution in Spain. Stoddard says he always wears a sorrowful face, because he is the one man in Spain that can't cheat you. He goes through the streets driving his goats ahead, and when milk is wanted the pail or pitcher is brought, milked full on the spot, and the goats trod along to the next house. There are innumerable things and



GIBRALTAR.

are hewn from the solid rock, and one can usually find many of the inmates in their gipsy dress willing and waiting to dance for the traveller that they may get a little money.

In the south of Spain most of the travelling must be done by day, as there are no sleeping cars. But the monotony of the long and tiresome journeys is broken at the stations by the dozens of dirty little beggars crying for "perros chica" or "perros grande," a cent or penny in our money. You can also buy all sorts of queer and delicious cakes. There is a kind of

places of very great interest in Southern Spain. But I shall only try to tell you a little of Seville before going back to Gibraltar. Its history is very interesting and important. The cathedral is a fine old pile, one of Spain's grandest. Perhaps the thing with the greatest charm for us here is the tomb of Columbus, resting on the shoulders of the four kingdoms of Spain, Segora Leon, Navera and Castilla, Murrillio's wonderful St. Anthony of Padua, also is worth a good many glances. The picture has been remarkably restored, though the guide always points out the

a. l. & M.R.

cuts made when the picture was stolen from its frame.

The "Alcazar" is another of the many Moorish palaces, scattered through Spain. Nor is it less beautiful than most, some parts have been restored, and it is here the Spanish royal family still stay when they go to Seville. Here also Peter the Cruel lived ages ago. You are shown the painted skulls in what was his bedroom, and told of the three men he murdered, whose heads he had cut off and hung in this room until they rotted, and were only then replaced by the painted skulls. It was in the garden of this palace that he contrived a novel entertainment for his guests. He had

many pipes laid along the garden paths and in the arbors. Each of these pipes had hundreds of smaller ones at right angles, and level with the ground, the whole was connected with a water supply, which Peter controlled himself. When he had succeeded in luring the ladies and cavaliers, in all the glory of their braids and jewels, into these beautiful garden paths, he would turn on the water, soak them, and roar with glee at the good joke he had played on them. This was one of Peter's mild est jokes, so perhaps, it would be well to bid farewell to Spain before we truly realized the dreadful cruelty of this old Spanish monarch.



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