

more than 130 distinct native species and varieties of grass in Great Britain, all possessing distinct properties, and varying in their degrees of value to the farmer, from the most worthless, to those on which his successful farming chiefly depends. The researches, too, commenced by the late Duke of Bedford, and carried on during a series of years in the grass garden at Woburn, have added very materially to our stock of knowledge concerning these plants; for, instituted with a public object, and under the careful and skilful management of one of my earliest correspondents, the late Mr. George Sinclair, the results were given by him to the public in the *Hortus Gramineus Woburnensis*, a valuable and elaborate work, to which I am chiefly indebted for the matter of this and other articles upon the grasses. The manner in which these celebrated experiments of the Duke of Bedford were conducted, is thus described:

"Spots of ground, each containing four square feet, in the garden at Woburn Abbey, were enclosed by boards in such a manner that there was no lateral communication between the earth included by the boards, and that of the garden. The soil was removed in these enclosures, and new soils supplied; or mixture of soils were made in them, to furnish as far as possible to the different grasses those soils which seem most favourable to their growth, a few varieties being adopted for the purpose of ascertaining the effect of different soils on the same plant.—The grasses were either planted, or sown, and their produce cut and collected, and dried at the proper seasons, in summer and autumn, by Sinclair, his Grace's gardener. For the purpose of determining, as far as possible, the nutritive powers of the different species, equal weights of the dry grasses or vegetable substances were acted upon by hot water till all their soluble parts were dissolved; the solution was then evaporated to dryness by a gentle heat in a proper stove, and the matter obtained carefully weighed. This part of the process was likewise conducted with much address and intelligence by Sinclair, by whom the various details and calculations were furnished. The dry extracts supposed to contain the nutritive matter of the grasses, were sent to me for chemical examination. The composition of some of them is stated minutely; but it will be found, from the general conclusions, that the mode of determining the nutritive power of the grasses, by the quantity of matter they contain soluble in water, is sufficiently accurate for all the purposes of agricultural investigation." (*Agr. Chem. app.*)

In regard to the description of soils—1st. By loam, is meant any of the earths combined with decayed animal or vegetable matter. 2d. Clayey loam, when the greatest proportion is clay. 3d. Sandy loam, when the greatest proportion is sand. 4th. Brown loam, when the greatest proportion consists of decayed vegetable matter. 5th. Rich black loam, when sand, clay, animal, and vegetable matters are combined in unequal proportions, the clay, greatly divided, being in the least proportion, and the sand and vegetable matter in the greatest. The terms light sandy soil, light brown loam, &c., are varieties of the above, as expressed.

The systematic arrangement of grasses is a difficult and unsatisfactory task, and has occupied the attention of many botanists.—The most recent work upon the subject is *Kuntz's Agrostographia*, published at Berlin in 1836.

In choosing the mixture of grass seeds most valuable for the farmer's soil, many considerations must be taken into calculation: not only the nature of the soil, and the supply of water to which its habits are best adapted, but also the objects which the farmer has in view. Thus, the meadow foxtail (*Alopecurus pratensis*), although an early, nutritive, and productive grass, requires more than two years to arrive at perfection: it is, therefore, better adapted for permanent pasture than for the alternative husbandry. And then, again, the meadow cat's-tail or timothy (*Poa pratensis*), although remarkable for producing the most nutritious culms of all the grasses, and that, too, in a considerable bulk, yields afterwards of very little value. Valuable, therefore, as it is for hay, it is of little consideration for feeding purposes if sown by itself: it must, therefore, be combined with other grasses. So the cock's-foot orchard grass (*Dactylis glomerata*), which soon arrives at perfection, and yields early and late a profusion of leaves, which are highly nutritive: has culms or stalks of little value; it is a grass, therefore, most profitable for feeding purposes. "Under these different relations, therefore," says Mr. G. Sinclair, "a grass should be considered, before it is absolutely rejected, or indiscriminately recommended."

The knowledge of the relative nutritive matters contained in different grasses, will also not only be a highly important object of research, as connected with their feeding pro-

erties, but as throwing considerable light on the powers of the different grasses to exhaust or impoverish the soil, a question which I shall examine more at length under the head "Rotation of Crops." A more intimate and extensive knowledge, with regard to the composition of plants, may be derived from even an examination of their external appearance than many persons would deem possible. The following are some of the general results of the observations of Sinclair:

1. Grasses which have culms with swollen joints, leaves thick and succulent, and flowers with downy husks, contain greater proportions of sugar and mucilage than those of a less succulent nature.

2. When this structure is of a light glaucous colour, the sugar is generally in excess.

3. Grasses which have culms with small joints; flowers pointed, collected into a spike or spike-like panicle; leaves thin, flat, rough, and of a light green colour, contain a greater proportion of extractive matter than others.

4. Grasses which have culms furnished with numerous joints; leaves smooth and succulent; flowers in a spike or close panicle; florets blunt and large, contain most gluten and mucilage.

5. When this structure is of a glaucous colour, and the florets woolly, sugar is in the next proportion to mucilage.

6. Grasses which have their flowers in a panicle, florets pointed or awned, points of the culm smooth and succulent, contain most mucilage and extractive.

7. Grasses with flowers in a panicle; florets thinly scattered, pointed or furnished with long awns; culms lolly, with leaves flat and rough, contain a greater proportion of saline matter and bitter extractive.

8. Grasses with strong, creeping roots, culms few, leaves flat and rough, flower in a spike, contain a greater proportion of bitter extract with mucilage. (*Hort. Gram. Wob. p. 42.*)—*Farm. Encyclopaedia.*

TO CORRESPONDENTS.

J. J. B. Thorold. We are very much gratified with the efforts he has made in our behalf. We hope many Farmers' Union Clubs will be formed in the country for the same object. And if they would meet together, and discuss freely and familiarly Agricultural topics, communicating to each other the results of their reading and experience, and, when anything of importance transpired, sending a short account of it to us, we would be willing and glad to insert it in our paper, and by these means an invaluable amount of good would accrue to themselves, and to the country at large. We would be obliged to J. J. B. if he would get a few persons of influence, in the places he mentions, to act as Agents for us. He might, without much trouble, write to them, as he will know who are interested in the cause of Agriculture in those localities, and in this way add to our list. At any rate, we trust he will not stop with the 12 names sent. He took more trouble than we expect from correspondents, in copying the pieces enclosed, as these kind of things can be had in any quantity from our exchanges, and as it is much easier to get from printed than from written copy, we should much prefer something on Agriculture; or, if J. J. B. has a literary taste, we should be glad to find room for him in that department.

U. W., Walsingham. Your case, if you tell the truth, is certainly a bad one. We commiserate your misfortune; and though you have mistaken our promise, which was to "farmers" who could not afford to pay 7s. 6d. for our paper, yet we will send you a copy on credit, hoping you will soon be able, not only to pay postage, but to send us the subscription. You may, at least, induce others to subscribe, who can pay. It was not a treatise on cut food that we asked for, but the statement of an experiment, by which its advantages has been proved. Your remarks are in some respects very good, but we have not room for them this week.

CANADA FARMER.

April 9, 1847.

AGRICULTURAL COLLEGE, AND AGRICULTURE A BRANCH OF STUDY IN THE COMMON SCHOOLS.

We have copied, on our first page, some excellent general remarks from the *Agriculturist*, by L. F. Allen, Esq., Author of the *American Herd Book*, a very extensive farmer, and one of the best agricultural writers in the State of New York, or indeed in the United States. We have inserted this article because we think it contains several suggestions particularly worthy of consideration by the intelligent farmer of Canada, at the present moment. There has lately been some talk about establishing an *Agricultural College and Model Farm*, in the neighbourhood of Toronto. The subject at present, however, seems to be lost sight of by the Press, though we have been told by a person who has taken

all these matters under his special control, that the thing is already "cut and dried." We confess we are disposed to question the fact, as well as the soundness of such early maturity. We are always suspicious of these "sub silentio," "hole and corner" proceedings, and we shall not be slow to sound the alarm should we discover any thing to justify public apprehension. The inestimable benefit such an Institution as that outlined by Mr. Allen, adequately supported and properly conducted, would confer upon our country in every branch of her industry, and in every department of her progress, we need not at present stop to shew. Upon the healthy and prosperous condition of Agriculture in Canada, every thing depends. To foster, encourage, improve and protect it, should be the first object of solicitude with the true patriot, to whatever class he may belong, or whatever pursuit he may follow, and should also first attract and longest occupy the attention of the politician and the legislator. As agriculture is incomparably the most important occupation—in which the greatest portion of our population are, and must ever be engaged, so it is that in which unfortunately there is to be found the greatest amount of ignorance, prejudice, mismanagement and disregard of improvement. There is no field of human labour (we speak of *productive* labour) which affords more room for the profitable and successful application of science, which in fact absolutely requires for its tolerable cultivation more preparation, more intelligence and training, than that of farming, taken in all its branches. There is none, in which more beneficial, more wonderful results have followed the application of scientific knowledge and philosophical investigation, in so short a time, as in this. We might easily refer to the instances and the proofs, but we must leave that part of the subject until another time. Is it not strange, then, that while the blacksmith must serve his apprenticeship before any man will allow him to nail a shoe upon his horse—the surveyor, the doctor, the lawyer, go through a course of preliminary study of years, and finally undergo examination, and attain permission to practice their several professions, the veriest dolt, he who has failed in every other business, and who could not perhaps tell you the difference between a dung-fork and a harrow, thinks himself quite equal to the business of farming; and that while hundreds of this class are defacing and abusing the generous earth, and thousands more of those who have served a sort of apprenticeship to very ignorant and unskilful masters, are daily "suffering for lack of knowledge," no effort should be made to alter this state of things? That neither Government nor associations of individuals should think it worth while to try the experiment of adopting the same means for the diffusion of knowledge upon this subject, and for the advancement of the interests of all who are concerned in the success of this art, (and who is not) that they use in every other?

We shall return to this subject again, and we shall not drop it till we see the "ball in motion," and in a fair way to roll on in triumph, gaining in velocity and force as it proceeds, and overcoming all obstacles. We shall advocate the propriety of introducing the study of agriculture, and the elementary principles of those sciences with which it is more immediately connected, into our common schools. Our common school system is in a very imperfect state. There is great room for improvement, and we think we shall be able to show that this is one of the most essential. There are branches of study pursued in the schools of this country, that might just as well be dispensed with, if it should be found that the addition of another would be too much for the attention of the pupil. We may instance English Grammar. There never was a greater farce than the attempt to teach children under the age of twelve or fifteen, a knowledge of its rules and principles. We have never seen an instance of any real benefit derived from such teaching. It more frequently happens that children acquire so great a distaste for that which they have been

made to study, but could not understand, that when they have become sufficiently acquainted with the meaning of words to be able to apply the rules of grammar to the construction of language, they throw it aside in disgust. The study of an elementary work on agriculture might very well be substituted for that of grammar; it would be something that a child could be made to understand and in which he would feel interested, and if it did nothing more than give him a taste for the study, he would follow it up as he grew older, and the effect upon the prosperity of our country from the general adoption of this means of awakening the attention of the rising generation to so useful, so necessary a study, could not be foretold.

HARROWING GRAIN.

The practice of harrowing wheat fields in the spring, wherever it has been properly followed, has, we believe, been attended with evident benefit. We have seen it done ourselves, and at the time we had great fears for the result; the wheat plants were trodden down, some torn up, and others covered over with the loosened earth, and altogether it looked like a piece of foolish, willful destruction. But in less than four days the good effect might be seen in the contrast between the dark, green, healthy, and luxuriant appearance of those lands over which the harrow had been drawn, and the yellow, sickly appearance of those parts that were left. We find the practice highly recommended by several of our American cotemporaries. They state that oats, barley, hemp, and all spring crops of grain may be harrowed with advantage whenever the surface of the ground becomes hard and encrusted, which all clay soils are liable to after a heavy rain.

The benefit of harrowing, we think, will be greatest when applied to wheat fields, which have been somewhat winter killed. It should not be attempted until the ground has settled and become dry; and the harrow, which should be a light one, with fine teeth and not too many of them, may be followed by a roller to press the roots that are laid bare by the harrow into the earth. We should think that the morning of a day that promises showers in the afternoon, would be the most suitable time for the operation. It was at such a time that we saw it done, and although the plants were pretty large, and were consequently knocked down by the harrow and roller, yet after a couple of showers, you would hardly know that any thing had been going on in the wheat-field unless from its freshened appearance. Stirring the earth encourages tillering, adds to the strength and growth of the plants, and thus makes up far more than is lost by the few that are destroyed. Some have used harrows with wooden teeth, asserting that much less injury was caused by them. We hope these remarks may induce some of our readers who have never tried this practice to make the experiment this spring, and satisfy themselves of its usefulness. From all appearances there will be occasion to make use of every expedient to remedy the effect of the present winter upon the wheat crops of a great part of Canada.

THE GARDEN.

No one who has the control of a square rood of ground should be without a garden. To those who are engaged in sedentary, indoor pursuits, the cultivation of a small garden affords an agreeable, healthful recreation, and it enables the poor man to enjoy many luxuries, without the usual expense of such enjoyments. The farmer, whether rich or poor, should never be without the "Kitchen Garden." He will find it quite as profitable as any other part of his business, requiring an equal amount of labour. The garden work can, in most cases, be performed by the female members of the family, except perhaps the digging and manuring of the soil, which, we assure the ladies, we think they ought not to be expected to do. But we must remind them, at the same time that we thus show our devotion to their interests, we expose ourselves to the censure of very high