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AGRICULTURAL JOURNAL,

AND

TRANSACTIONS

OF THE

Lower Canada Agricultural Society.

VOL. 1. MONTREAL, FEBRUARY, 1848. NO. 8.

In our last number, we gave the estimated amount of the deficiency of the crops in the British Isles, in the year 1846, or rather what amount would be required to make up the deficiency, and this was considered to be £48,000,000. To this deficiency, of the usual annual produce created, may be fairly attributed the money difficulties that have lately occured in the British Isles, and generally throughout the commercial world. This is another proof how much the prosperity of all classes, of all communities, is interested in the prosperous state of Agriculture. It is the products of Agriculture that alone can keep the whole machinery of trade, manufactures, commerce, and banking, in healthy activity. The funds required to make up the deficiency of a country's produce must be withdrawn, from other channels of employment, to purchase foreign food for the people, and hence the derangement in every branch of trade. The population of the earth is now so great, and every year increasing, that it becomes the *first* duty of every country to provide for the proper cultivation of the soil. Whatever may be considered the best means to accomplish this, it is our duty to adopt without hesitation ; it is not a matter that should be put off to a more convenient season. The very existence, as well as the prosperity of the people, may depend upon adopting an improved and judicious system of Agriculture. This duty is not secondary to any other duty that we owe to society, and the time is arrived for the exertion of every man who is a friend to his country, to aid in promoting Agricultural improvement.

From recent accounts it appears to be confidently expected, that the scheme of Agricultural instruction by means of travelling Lecturers, which has been propounded by the Lord Lieutenant of Ireland, will be crowned with success. The Duke of Leinster, President of the Royal Irish Agricultural Improvement Society, is represented as unceasing in his endeavours to carry out the plan suggested by Lord Clarendon, and the unbounded respect and confidence, which are generally entertained in the judgment and integrity of the Duke of Leinster, will ensure success, if anything can. There is scarcely a doubt, that most beneficial results will be the consequence of practical instruction to the people, offered to them by those in whom they have confidence. Why should not similar modes of instruction succeed in Canada, as well as in Ireland ? We are not aware of any cause to prevent it. Improvement is necessary on almost every farm, and the adoption of measures to produce this improvement, is a duty this Society have taken upon themselves to perform, if in their power.— General instruction, however, cannot be communicated without adequate funds. To diffuse useful and practical instruction on the art of Agriculture throughout the country, would be an employment of funds, that could not fail to be productive of a vast amount of general prosperity. We believe the Lower Canada Agricultural Society enjoy the confidence of the Agricultural classes, but to enable them to execute the plans of improvement, for which they have associated, they require funds to be placed at their disposal, without which it will be impossible for them to accomplish their object.

THE FARMER.

TABLE OF MANURES, WITH THE QUANTITIES TO BE USED, AND MODE OF APPLICATION.

NAME OF MANURE.	NATURE AND COMPOSITION.	FOR FARM CROPS.	FOR GARDEN CROPS.	WEIGHT PER BUSHEL.
GUANO,	The dung of sea birds, imported from Peru, &c., and containing various salts of ammonia & phosphates.	3 to 4 cwt. mixt with its own weight of ashes or mould, and drilled, or sown broadcast, for grass turnips, mangold wurzel, or other green crops.	3 lbs per square rod, equal to 30¼ square yards. This and all soluble salts, are best applied in solution, containing not more than 5 ozs. in 2 galls. of water.	80 lbs.
NITRATE OF SODA,	Nitric acid and soda, a natural product imported from Peru, &c.	1½ cwt. per acre, sown broadcast with half its own weight of ashes or mould, for wheat, oats, grasses, &c.	1 lb. per square rod, in solution, like guano.	60 lbs.
NITRATE OF POTASS, SALTPETRE,	Nitric acid and potass, a natural product, imported from the East Indies.	1 cwt. per acre, sown broadcast, in the same manner as nitrate of soda, for wheat only.	1 lb. per square rod, in solution, like guano.	80 lbs.
PETRE SALT,	Common salt and nitrate of potass, the residuum of a manufacture.	5 cwt. per acre, sown broadcast, as a purifier of grass land.	4 lb. per square rod, in solution, like guano.	75 lbs.
GYPSUM, SULPHATE OF LIME,	Sulphuric acid and lime, an abundant mineral in several parts of England.	2½ to 3 cwt. per acre, sown broadcast on clover, trefoil, sainfoin, and other grasses.	3 lb. per square rod.	80 to 84 lbs.
SULPHATE OF AMMONIA,	Sulphuric acid and ammonia, the residuum of a manufactre.	2 cwt. per acre, mixed with a little mould, and sown broadcast, for clover, oats, &c., and drilled for turnips.	1 lb. per square rod.	70 lbs.
BONE DUST AND HALF INCH BONES,	Phosphates of lime and magnesia, carbonate of lime and animal matter yielding ammonia.	1½ quarters to 20 bushels drilled or sown broadcast, mixed with ashes, for turnips, vegetables, wheat, &c.	19 to 20 lbs. per square rod.	42 to 45 lbs.
CALCINED BONES,	The same constituents as the above, with the exception of the animal matter.	For mixing with farm-yard dung, and other manures containing ammonia.		
PHOSPHATE OF LIME,	Phosphoric acid and lime.	This manure is easily blended with farm-yard litter, &c	3 lbs. per square rod.	
SUPERPHOSPHATE OF LIME,	Phosphoric acid and lime in a more soluble state than in bones, prepared by dissolving bones in sulphuric acid.	For mixing in composts, fixing the ammonia of dung heaps and urine tanks, and forming phosphate of ammonia.	For garden culture, ¼ lb. to the square rod.	
PHOSPHATE OF AMMONIA	Phosphoric acid and ammonia.	For mixing in compost, and furnishing from its constituents much nutriment to vegetation.	1 lb. to the square rod.	
MURIATE OF AMMONIA,	Muriatic acid and ammonia.	Applicable in the same manner as sulphate of ammonia.	1 lb. to the square rod.	65 to 70 lbs.
MURIATE OF LIME,	Muriatic acid and lime.	For mixing with compost heaps.	2 lbs. per square rod.	65 to 70 lbs.
SULPHATE OF MAGNESIA,	Sulphuric acid and magnesia.	Mixed with night soil for potatoes 1 cwt. per acre, or to 8 loads of stable dung.	¾ lb. per square rod.	
SODA ASH,	Lime, magnesia, alumina, charcoal, silica, and a few other ingredients in smaller proportions.	For destroying wire-worm and other predacious insects. 1 cwt. per acre. This quantity must not be exceeded.	-	60 lbs.

PROFESSOR JOHNSTON'S LECTURES,

AT CHESTER.

We now proceed to give the learned Professor's second lecture, as follows:—

Professor Johnston said he wished now to remark that his present address would embrace only a general outline of the various matters relating to the feeding of stock, leaving the minor points as subjects on which his audience must themselves institute further inquiries. The purposes for which animals were fed were two fold, viz.: that they might be sustained, and that they might be fattened and increased in size and weight, and also produce butter, cheese and milk. Now in order to sustain animals certain things were required; but before saying what those things were it would be necessary to enquire of what the body was constituted which required the sustenance. If they therefore took a portion of the body and burned it, they would find it to consist of two kinds of matter, combustible or organic matter, and inorganic or mineral matter. The larger portion which disappeared was the organic, and into the chemical constitution of that it would be their duty particularly to enquire. What then did the organic part consist of? Now they would observe that the piece of meat he held in his hand consisted of fat and lean, or organic substances, and the bone a mineral substance. If he were to wash the lean portion, he could ultimately remove the blood, which gave it a red appearance and it would then be of a white colour, and would have a fibrous appearance; hence the word fibrine was applied to it. And this lean, or muscle, on being submitted to chemical tests, would be found to consist of albumen, a substance nearly identical with the white of egg. If he took that muscle and burnt it, the portion of mineral matter that remained behind would only be about ½lb. in 100 lbs. In the bone, as he last night informed them, phosphoric acid and lime were present in large proportions; and were obtained from the plant on which the animal fed, that plant in its turn having received it from the soil. The question then arose with regard to the muscle and fat, does it get that ready formed from the plant on which it feeds, or is it formed in the stomach of the animal. The mineral matter existed in the plant, but it was not so evident how the muscle and fat were built up of what the animal eat. They could conceive that the bodies of carnivorous animals, which lived on each other, were constituted of the muscle and fat which they took into their stomach; but it was not so apparent at first sight that the same was the case with the herbiverous animals. If he took a portion of flour and made it into dough, and then washed that dough in water, he should obtain a milky fluid, and if left to subside, he should obtain a white powder, which was starch. If he washed the dough in a seive, a portion of it (the starch) would go through the seive, and the rest (glutinous sticky substance) would remain behind—hence the name given to it, gluten. Wheat flour, therefore, consisted of gluten and starch, and what was true of this grain was true of others in different proportions; and this substance was almost indentical in its chemical properties with animal lean. Then if they took linseed or rapeseed and subjected it to the pressure, they obtained oil from it; and all seeds, as wheat, oats, Indian corn, beans, and peas, contained oil in greater or less proportions, which oil was of a similar chemical composition to the fat, of the animal. In wheat the proportion of oil was from 2 to 4 in 100; in oats, from 6 to 8; in Indian corn, from 8 to 10. The general inferences to be drawn from these facts were, that the animal contained muscle, so did the plant (or at least the substance of it;) the animal contained fat, so did the plant; and, therefore, the deduction was clear that the hiberverous animal derived from the food which it eat the substance of which its body consisted. He had stated that if dough were washed it would produce from 50 to 60 per cent. of starch; but as there was no starch in the muscular part of the animal, and as nothing in nature was created without good reason, what purpose did it serve in the animal economy? In explaining this, it would be necessary to refer to some of the functions the animal was called upon to perform; and the two functions to which he referred, were respiration and digestion. He would now return to the question of what food should be used in sustaining and increasing the size of animals. It required then starch to sustain life; for animals could not live without breathing; it was also required that the food contain the substance of muscle, fat, and bones; otherwise the animal body would waste itself away. They must remember that all the animal received came out of the stomach again if it did not increase in size and in weight; if it did so increase then all the food was not rejected, and the process of fattening went on. Oats contained larger quantities of oil than any other grain grown in this country; linseed cake contained still larger quantities; as its subjection to pressure still left a considerable quantity behind, the proportion being about 12 per cent. Even bran contained 5lbs. per cent. which was more than wheat though less than oats or Indian Corn. If they wanted to fatten cattle, therefore, oil cake was the best adapted to the purpose; Indian corn came next, and oats followed. These were the principal kinds of food for the production of fat. But the muscle should be increased as well as the fat, and in oil-cake, nearly one-fourth part of the whole consisting of albumen, it was particularly available for that purpose. It was now an established principle in good practical feeding, that the several kinds of food should be adjusted to each other. If they feed cattle on one kind of food it would not be so beneficial as if fed on two; and if they used three kinds it would be better still, and more profitable. There were no doubt many circumstances which modified the effect of certain kinds of food

on animals. They knew that in laying down bones on grass lands, it was generally preferred to boil them, particularly on dry soils; and so the food administered to animals produced a different effect according to the state in which it was given. Hence the use of prepared food had now become very general; and he would give them one practical illustration of the value of prepared food. A friend of his had adopted the practice of feeding his cattle on prepared food with particularly good results; he boiled 2lbs. of linseed in four gallons of water, and mixed 10lbs. of cut straw and 5lbs. of ground corn with the jelly, and gave it to them in two messes, alternately with two feeds of Swedes of 50lbs. each, per head per day; and the results of the plan was most remarkable. On the old system he grew about forty or fifty acres of turnips, and sold about 120 fat beasts per year; but by adopting the prepared food he had been enabled to sell and fatten double the quantity of cattle on the same quantity of turnips as he grew before; he obtained a greater quantity and much more valuable manure, and of course his corn crops benefitted in proportion. Another effect of the prepared food was this: whenever they went to look at the cattle they were always lying down, and they never rose till their fresh mess was brought them. The lessening of the time of feeding the cattle was another advantage, for if a certain portion of food was always required for the mere sustaining of the animal as distinct from that which went to the increasing of fat it was clear that if a beast could be fattened quickly so much of the food which was applied to the sustaining would be saved. If a beast was fattened in three months instead of six of course all the food applicable to the mere sustentation for three months would be spared. Thus the cost of production was largely decreased, the money turned over more rapidly, double the number of cattle were sold, and his grain crops were benefitted by the additional manure. They all knew that the droppings of cows fed on oil-cake were better for land than the ordinary manure; but he had heard of instances where the crops of barley had increased in a three-fold ratio where manure from prepared food had been used as compared with the ordinary farm yard manure. In addition to these things in fattening cattle other matters must be attended to. There must be sufficient warmth, shelter, the avoiding of annoyance, ventilation, absence of light, all important, and all would be attended to by the man who studied agriculture to good advantage. There was one point of view in which he now wished to place draining before them as it related to the feeding of stock. He had mentioned last evening that the plants grown on undrained land were of a cold temperature, and this peculiarity also communicated itself to every thing that fed on those plants. The temperature of the field affected the temperature of all that grew upon it, and the deprivation of warmth had a pernicious effect in the feeding of cattle. The grass grown on drained land went much further for the purposes of fattening than that grown on wet land; and thus every breach of the rules of good husbandry brought with it its own punishment, and that too in more respects than one. He would now only direct attention to one other purpose for which cows were kept—they were kept not only to be fed, but to yield milk. Now a milk cow required to be sustained, though it did not require to be increased in weight; and as what they consumed was something more than went to make up their own bulk—for it served to form milk, in which was contained butter and the curd of which cheese was made—it was necessary that their food should partake largely of the essential qualities of that which they were required to produce. Now curd and butter were almost identical in chemical qualities with the gluten and oil obtained from oats. The analysis of milk in 100 parts gave the following result:—

Caesein.....	4.48
Butter.....	3.13
Sugar of milk.....	4.77
Saline matter.....	0.60
Water.....	87.62

And whatever would increase the production of beef would increase the production of rich milk. In the neighbourhood of large towns the dairyman did not care so much for the quality of the milk as for the quantity, and he therefore gave his cattle food containing large quantities of water, such as mashes, brewer's grains, and turnips, applying this salvo to his concience, that he was putting the water into the stomach of his cattle, instead of putting it into the milk after it was produced: but when the milk was required for the production of good butter and cheese a different kind of food was used. Hence oil-cake was given, which produced a large quantity of butter; Indian corn also procured the same result; and oats, which contained both fat and gluten, he understood were principally used in this district. Beans and peas were sometimes given; but although these contained a large proportion of gluten, there was little if any fat in them; and indeed there seemed to be no reason for doubting, that of all the grain grown in this country, oats were the best adapted for a dairy stock, because they contained the largest quantities of that which went to form both butter and curd. There was one point of considerable consequence in connection with the keeping of a dairy stock; and it was this, that whereas the animal that did not increase in weight restored everything that it took into the stomach, the dairy cow only restored that portion to the manure heap which went to sustain it: and to that extent was the land robbed of the materials with constituted milk. The Professor concluded by referring, in brief terms, to the treatment of sheep, and the importance of sulphur in the production of wool.

CHEMISTRY APPLIED TO PRODUCTIVE FARMING,

BY MR. C. W. BINGBEY.

As to the Application of Manure.—The next question will be, whether the manure sustains any injury by being spread out upon the fallows sometime previous to ploughing it in. On this, I would say, that in a hot, dry season, it most decidedly does suffer. But I would again call your attention to the fact, that the manure from a well managed midden will suffer materially less than one that has not been equally taken care of. I should lay it down as a rule, that the farmer ought, in all cases, to spread his manure out of the cart on the land; and in the case of fallows, plough it in as soon as he possibly can do so afterwards. The shooting it out into heaps, and there leaving it for some time, to wait the opportunity of being spread, is the worst plan that can be pursued. A further decomposition takes place in these heaps, and much more valuable matter goes to waste to a much greater extent than if the parts lay disintegrated, although they may be at the same time exposed to the action of sun and wind. Again, if the weather happen to be wet whilst the manure lies in these small heaps, all the soluble parts of the manure are washed down into the ground immediately about the heaps, which causes an unequal distribution of them to the rest of the field. I may here take occasion to mention another circumstance which has struck me with reference to preparing fallows for seed, particularly turnip fallows. Though it does not exactly refer to our immediate subject, it is that although we may not have any control over climate, we might, in a variety of ways, prevent much of the injury caused by unfavourable weather for our operations, if we cannot obviate the difficulty altogether. For one instance in a very dry turnip season like the last, the early development of the plant would be more encouraged and better sustained by permitting the ground to lie undisturbed a short time, say ten days or a fortnight after dressing it, but previous to finally turning it over for the sowing; it would then be found to be in a fresher and moister state to receive the seed than if stirred about at a later period. But after the plant has got fairly a-head should the weather continue parching hot, frequent hoeing and stirring of the ground is of service, by admitting air, and exposing a larger surface to the night dews. The error of putting quick-lime and ammonical tillages, in the ground together, is now, I hope, too generally known to be such as to leave no occasion for me to say more than it is an error. The next inquiry I shall make of you, and at this season it may be an important one, is, when is it the best time to apply farm-yard manure to grass land? Now, as far as the question is concerned, I am disposed to think that, beyond the circumstance of shelter being afforded to the plants, no immediate benefit is afforded by applying it at this season, because, I conceive that the plant is in a partially dormant state, and is not actually seeking out for food; and that, if the tillage be applied in February, it would on the whole, be more beneficially bestowed than now, because it would be then that a renewed vegetation would commence, and then would there be the greatest occasion to supply the demands of the plant. Perhaps to some the effects seen in a grass field, produced by the drainings of fold yard manure directly into it, might seem to refute the notion that the plant is in too dormant a state to require much food; but then, I would remind those, that such an instance is not a fair one to cite. There is in that case a continuous supply of extraordinary and very stimulating manure; and then, again, in a very severe frost, the liquid itself becomes frozen, and by thus spreading a thin sheet of glass, as it were, over the plant, affords a very sensible protection to it. Irrigation has similar effects to this case. As to what the extent of the loss of tillage from rains may be, I apprehend that, in well-drained lands, it would not be so great as generally imagined on lands requiring draining; and on a close retentive soil, such loss would inevitably be greater. The effects of draining are not simply confined to the taking away water. It has the effect of rendering the soil more permeable to the atmosphere, it consequently becomes more expanded and porous, and more absorbent; and hence my reason for supposing that the loss of tillage from heavy rains would not be so great on well-drained lands as on land that required draining. In one case, the rain has a chance of immediately getting into the land, carrying with it the soluble parts of the tillage which, from the different condition the soil is in from draining, to be undrained, gets thoroughly diffused through the pores of the soil. On the other hand, particularly in the case of very heavy rains, the tillage is completely washed off the surface, and does not enter into the soil at all. From several experiments I have made with a variety of soils, by placing them in deep pots with a hole at the bottom, to permit water to drain through them, I have found, that after pouring solutions of different kinds of salts on them, that they have retained a much larger proportion, varied very considerably, it is true, with different soils, but those that had the greater power of absorbing moisture from the atmosphere retained the most. Again, I have found that on undrained land, where I had applied soluble salts, that but a very small proportion indeed remained in the soil after very heavy rains; on a very close retentive soil, none at all. This, therefore, inclines me to suppose that, on well-drained lands, the plants might have the shelter of farm yard manure afforded them, without so great a loss of tillage; but that on undrained lands, and cold wet soils, a loss might ensue too great to admit of the practice.

SUMMER FALLOW.

Let us then consider, 1st.—*What objects have we in view in bare fallowing?* One is to clear the land of weeds; and a great object too, for we all know that the soil can only afford nourishment to a certain amount of vegetation at one time. If it is allowed to be overrun with weeds, we cannot expect wheat; for, unfortunately, the soil distributes its nutritive properties with great impartiality, making the noxious weed fully as welcome as the farmer's tender nursling. Another is to expose every particle of the soil to the influence of the air and sun. The benefits which attend upon the working of the land are well explained by Professor Johnston. "Its parts," says he, "are more minutely divided, the air gets access to every particle—it is rendered lighter, more open, more permeable to the roots. The vegetable matter it contains decomposes more rapidly by a constant turning of the soil; so that wherever the fibres of the roots penetrate, they find organic food provided for them, and an abundant supply of the oxygen of the atmosphere to aid in preparing it. The production of ammonia and of nitric acid also, and the absorption of them both from the air, take place to a greater extent, the finer the soil is pulverized, and the more it has been exposed to the action of the atmosphere. The general advantage, indeed, to be derived from the constant working of the soil may be inferred from the fact that Tull reaped twelve successive crops of wheat from the same land, by the repeated use of the plough and horse-hoe." It is not mentioned in this quotation, that during the whole time that land was raising these crops, Tull applied no manure to it whatever, though such, I believe, was the case. We must see, from Professor Johnston's words, what injustice we do to our land, by allowing it to be soaked with water; for this not only hinders the circulation of the air in the soil, but the heat, which should be otherwise employed, is fully engaged in counteracting our bad management by evaporating the superfluous moisture. Another benefit derived from the turning up of the soil is the destruction of the poisonous property of the excrements of plants. Plants, we are given to understand, receive all their nourishment from the soil in a liquid state: there is, as it were, a soup formed of the different constituents of the soil, which is taken up by the roots of the plant; the digestive organs of the plant then cause to be assimilated those properties of which it stands in need, discharging the residue again to the soil. This excrement, as it is called, is exhausted of those constituents which can afford nutriment to plants of the same kind as those from which it has been discharged; in fact, it acts upon them as a poison. Now the plant, since it is not endowed with that discernment which enables it to take that only which is wholesome, takes this again into its vessels, and again discharges it, thereby being kept back in its growth, if it even escape serious injury. This is the reason for which we cannot grow the same plant for a number of years in succession, without its suffering deterioration; and it accounts for what we term the sickness of land. "During autumn and winter," says Liebig, "this excrementitious matter begins to suffer a change from the influence of air and water; its putrefaction and (at length, by continued contact with the air, which tillage is the means of procuring) its decay are effected; and at the commencement of spring, it has become converted into a substance which supplies the place of humus, by being a constant source of carbonic acid." This humus, you will remember, is one of the most valuable properties of the virgin soil: it is composed of decayed vegetable matter, in a dead or inert state, and only requires exposure to the oxygen of the air to afford a large quantity of nutritive matter to the growing plant. Another object we have is, to seize on a favourable opportunity to deepen our soils. No one now, I think, will deny that it is better to have twelve inches for plants to spread their roots in than six. The great reason that the deepening of the soil proceeds so slowly is, that when an entirely new surface is exposed, the crop, of wheat in particular, is never so good for some time. The reason of this seems to be that the subsoil has some constituents injurious to vegetation, and that the eggs, larvæ, &c., of insects are buried beneath the active soil, and remain in a dormant state (Johnston's lectures, page 574) until quickened by the heat of the sun. To cure this it is necessary to expose the land to the winter's frost, and in the spring to give it a dressing with lime or salt, either of which will answer the purpose. But soils may be deepened by the repeated use of the subsoil plough, after draining, without affording any grounds for this objection; for when water and air have had a free circulation in the subsoil for some time, it may be brought to the surface with little injury.

We will now consider our second query: *On what descriptions of soil is bare fallowing necessary?* Without doubt there is a great extent of land at present under the bare-fallowing system, which would reimburse the outlay attendant on the grain crop. The reason assigned for such land as this being bare-fallowed is, that sufficient manure cannot be collected to raise a fallow crop. Such an excuse as this cannot, I think, be tolerated any longer after the convincing proofs we have received, and are daily receiving, of the great efficacy of bone dust, guano, and the artificial manures. Liebig says that "the quickness with which the decay of the excrements of plants proceeds, depends on the composition of the soil, and on its greater or less porosity. It will take place very quickly in a calcareous soil, for the power of organic excrements to attract oxygen and to putrify is increased by contact with the alkaline constituents, and by the general porous nature of such kinds of soil as freely permit the access of

air. But it requires a longer time in heavy soils consisting of loam and clay." What Liebig here says of the excrements of plants may be extended to the other chemical changes which take place in the soil by its contact with the air. The question which we must then ask ourselves is, can we give sufficient access of air to the soil without a whole summer's constant turning? I think, myself, that there is a comparatively small proportion of soil in which this cannot be done. If we could not dispense entirely with the bare fallowing, we might, perhaps, at least be able to defer the evil day. There are some heavy clay soils so very compact that they deny all entrance to water and air; these, as long as they are in their present state, must have a bare fallowing at times, but the nature of such soils as these must be changed if possible.

This suggests our third query: *Could the soil be rendered so as to require bare fallowing less frequent?* I think it might, if we could overcome, to a certain degree, the tenacity of the clay. In considering this point, we may lose sight, for a time, of the organic constituents of the soil, and consider only the earthy part. "The earthy or insoluble portion of soils," says Professor Johnston, "rarely constitutes less than 95lbs. in a hundred of their whole weight. It consists chiefly of silica, in the form of sand—of alumina, mixed with silica, in the form of clay—and of lime, in the form of carbonate of lime. If 100 grains of clay soil leave no more than 10 of clay, it is called a sandy soil; if from 10 to 40, a sandy loam; if from 40 to 70, a loamy soil; if from 70 to 85, a clay loam; if from 85 to 95, a strong clay soil." The soil with which we have more especially to do is one, then, containing a very large per centage of clay, and consequently very tenacious. The first method we will consider of rendering the soil less so is—*draining*. Draining is now justly considered the foundation on which to build all other improvements. It is the best means we can take to render our soils more friable. Water, if it has a free passage below the level of the active soil, instead of retarding, will forward all our operations; for so long as this vent exists, the land cannot clap or run together. It is not the rain which runs through the soil, but that which is allowed to stagnate, which renders the clay soils so difficult to manage. That draining does render the soil more porous, is so universally acknowledged, that I will delay you with its consideration no longer, but hasten to mention other means of improving the soil; but none of them should be attemped until the land has been thoroughly drained. One of these methods is—*mixing with sand.* This is a most effectual way of doing the business; but unfortunately, the cost is so great as rarely to refund the first outlay. But where, as is sometimes the case, a bed of sand is lying below the soil, or the sand or gravel hill is in the immediate neighbourhood, it may be done with great advantage. Another is to apply burnt clay. This is perhaps the most effectual, and, at the same time, economical way of improving heavy land. Clay when it is burnt is deprived of that principle of tenacity which renders the cultivation of such soils so expensive. It not only benefits lands by its "mechanical operation of loosening the soil," but it also itself contains, when not too much burnt, a portion of vegetable matter; and we are informed by Liebig that by its great affinity for the ammonia brought down by the rains, it fixes it in the soil, as well as that which, but for it, might escape from the soil itself. There are accounts of the most extraordinary increase given by the application of burnt clay to turnips and clover; in fact, one gentleman preferred the clay to the best farm-yard dung. It is considered, on the property on which I have seen it used, that it had the effect of producing more slain in the wheat; but I cannot say how far this is true. The art of burning clay is well explained in the account of British husbandry, and in the seventh volume of the Journal of the Royal Agricultural Society. The expense of burning mentioned in the former is only 6d. per single horse load, and Mr. Pusey states in the latter that top-dressing his land with 80 bushels per acre of burnt clay cost £2 5s. There are many other ways in which the nature of strong clay soils may be to a degree changed; among these may be mentioned the application of lime, coal ashes, marl, shells, gravel, &c.; but, generally speaking, they are only practicable in certain localities.

We will now consider our fourth query: *Which is the best method for bare fallowing?* I shall touch very slightly on this question, as, I may say, you all have had more experience than one so young as myself, and have thereby received a practical answer to it. Our object must be to expose as much land as possible to the winter's frost and moisture, as it is by the expansion of the water in freezing, that every particle of the soil is, as it were, pushed out of its place; the land by this means receiving a more thorough disintegration than could be effected by all the most improved implements. We may judge of the enormous power exerted on the soil by the frost, from the consideration that the water, when in the act of freezing, has been known to burst asunder strong metal pipes. In the spring, the soil, near the surface at least, should be in almost a powder—we must take care that anxiety to get forward with the work does not hurry us on to the land too soon, so that it run together again. It is proper, too, I think, as the height of summer approaches, to have that portion of the land near the furrow, which usually produces the greatest abundance of weeds, exposed to the sun and wind. The land during the summer should have repeated ploughings, grubbings, and harrowings, always to mind that our object is to expose every particle of the soil to the light and heat

of the sun. Dunging, I think, is often proceeded with too early in the season. We have seen that the soil is a workshop in which the constituents of plants are constantly being prepared. Now, if we put on the dung in the beginning of summer, all our future workings of the land tend to promote this process more rapidly; the consequence is, that at seed time the soil is full of the food of plants; and this at a time when the plant does not require it. "When a seed," said Professor Johnston, "is committed to the earth, if the warmth and moisture are favorable, it begins to sprout. It pushes a shoot upwards, it thrusts a root downwards; but, until the leaf expands, and the root has fairly entered the soil, the young plant derives no nourishment other than water, either from the earth or from the air. It lives on the starch and gluten contained in the seed." But even if the plant does derive nourishment from the manure in the autumn, the only effect produced will be, that it becomes *winter proud.* But the dung is not so much exhausted in this way, as by encouraging the growth of weeds, and by being washed from the soil by the winter rains. That dung is washed from the soil is placed beyond doubt, I think, when we call to remembrance that, on the average, throughout England, upwards of 31 inches of rain fall in the year, and that for every perpendicular inch per acre there falls 100 tons of water. In summer this immense quantity of water does not do so much harm, as a great part is taken up again by evaporation, the land by this means only lending a little ammonia to the air; but in winter, on drained land in particular, nearly the whole has to run through the soil, as the evaporation is very trifling. It is much better, I fancy, not to manure the land until the end of August, in which case the dung is not prepared to afford nutriment to plants until the spring, the very time at which the young plant requires a powerful stimulant to rouse it from the torpor of winter. Instead of the usual practice of dunging land, I have tried and commend that, explained by Stephens, in his "Book of the Farm," which is, to have the field drilled, and dung put into the land, in exactly the same manner as is done for turnips. When this method is pursued, the weeds should be gathered previous to drilling, and again after; if then the land is not perfectiy clean, the drills may be split again and again, and gathered until it is so. By deferring the cleaning of the land until this time, there is a much better chance of lifting the weeds *unbroken.* The advantages of having the land drilled up, I conceive to be these:—There is a larger surface exposed to the air than can be by any other form. The dung is more evenly distributed over the land, and there is not that waste of manure which occurs when it is left on the surface for days, as we sometimes see it. The land, too, is lying in that form in which it can best receive heavy rains. The best manner of making the seed bed is with the small ribbing plough, the ribs being about fourteen inches from centre to centre. The seed may be put in with the broad-cast sower or by hand. This answers a better purpose, I think, than with the Suffolk drill, as the plants have more room in which to spread their fibres, to seek their proper nutriment. The ribbing or drained land should be across the drains, for by this means every part of the ridge has its fair proportion of active soil; whereas, if the land be gathered up, it is robbed of it. The ribs, too, can be formed more regularly, and with the least loss of land, and there is less chance of forming an impervious layer over the drains. It is injurious, I think, to have the soil too finely pulverized at seed time; for if heavy rains come, it is apt to run together; or if it is dry, it is in so contracted a state that the winter frost and moisture cause it to swell, throwing up and exposing the roots of the plant. But if sown with a clod, even if the roots are thrown out a little, these clods, by being reduced to a powder, fall over the exposed parts, and so protect them; and, besides this, they form a fine mould, in which the grass seeds will freely germinate in the spring. In the usual course of cropping adopted in this district, bare fallowing occurs once in the four years, or often twice in seven.—*Farmer's Magazine.*

THE FARMER.

SKETCHES FROM A MODEL FARM.—Whoever strives to improve the condition of agriculture merits the gratitude of the community at large; and it is with satisfaction, therefore, that we mention the name of Lord Torrington as having caused a homestead, upon a very improved plan, to be arranged at Pekham Green, Mereworth, near Maidstone, which, with buildings and machinery complete, cost upwards of 2000*l.* The farm-house possesses every convenience and comfort; the offices adjoining are enclosed within a wall, and the whole capable of being secured by lock and key. On entering the gate facing the east, stands the large bullock or cattle lodge, entirely under one roof, and capable of containing forty-eight head of cattle, besides calves and sheep. A sketch of this will be found at the head of our calendar for July. It is of an oblong square 53 feet 7 inches, by 90 feet 6 inches, and divided into six compartments, each beast having a feeding trough and cistern to itself, whilst pipes convey currents of cool air to the animals' heads. According to the principle carried out, there is a covered drain, by which the drainage and refuse passes off into a receiver, where, after lying about a fortnight, it becomes perfectly eligible to be used as good manure. There are several rooms adjacent to this building, one for cooking the food for the cattle, of which we give a view, another, with two floors, with a machine for cutting turnips, &c.; and at the end is an oil mill complete, for making the linseed cake; the chaff

cutting and straw-rooms are under the same roof with the rest, and, being so close at hand, everything is carried on with perfect facility and ease; and at one extreme is a window, from the parlour of the farm-house, so that the manager can at all times command a view of the whole proceedings. On the opposite side to this lodge is a capacious barn, with two floors, on one of which is a threshing machine capable of turning out fifty quarters per day, and on each side are three loose boxes for horses, bulls, or cattle that are sick. Behind these is the piggery, and close adjacent, the cart-houses and other buildings. Also the oast houses, on a new construction patented by Knight. The machinery is turned by two horses in a mill. At a short distance stand three cottages, each having two rooms on the ground floor and two above, with a small flower-garden in front, and kitchen-garden at the side; of these we also give a sketch. In the back-yard is a pump for general purposes, an oven for the whole of the inmates, a drying place and laundry.

Characteristics of the Well Bred Ox.—1. The head shall be fine, somewhat long and diminishing to the muzzle, which shall be thin. 2. The horns shall be fine, and placed on the summit of the head: the eyes shall be prominent and clear. 3. The neck shall be free from coarseness, large where it joins the shoulders and breast, and diminishing to the head. 4. The breast shall be wide, and project well in front of the four limbs. 5. The shoulder shall be broad, but join without abruptness to the neck before, and to the chine behind. 6. The back and loins shall be straight, wide, and flat. 7. The girth behind the shoulders shall be large, and the ribs well arched. 8. The hook-bones shall be far apart and on a level with the back bone; and from the hook-bone to the bending down of the tail, the quarter shall be long, broad, and straight. 9. The tail should be broad at the upper part, and small and progressively diminishing towards the extremity. 10. The legs shall be short, fleshy to the knee, and hock, and below the joints flat and thin, and the hoof shall be small. The skin shall be soft to the touch, the belly shall not hang down, there shall be a little hollowness behind the shoulders, and the flanks shall be well filled up.—"*Lowe's Domestic Animals.*"

The best way to keep Farm Horses.—Dr. Sully, of Wivelescombe, Somersetshire, has, with success, adopted the following method of feeding his horses, which constantly work hard, and travel at the rate of eight or nine miles an hour. He has, for upwards of twenty years, followed the same plan. In his stables there are no racks to hold hay, as he considers it a wasteful method of feeding; and that the horses, when they have the command of their heads, pull the hay out of the rack, and throw a considerable portion of it under their feet, and 30lbs. of hay and upwards are often consumed in this way, and spoiled in the twenty-four hours; whereas, when it is cut and mixed with a due proportion of cut straw and bruised corn, 10 lbs. are sufficient. In the loft above the stable, proportional quantities of food sufficient for the daily consumption of each horse are prepared; a pipe is made to pass from the loft into each manger, and close by the top of the pipe is placed a tub capable of containing sufficient for a horse for 24 hours. To prevent the horse from tossing the mixed food out of the manger, cross bars are nailed on the top of it at 12 inches apart; the cut hay and straw, and also the grain, are regularly weighed out, and when the ingredients are prepared, the proportions for each horse are allotted.—The table which follows shows the articles of food given, as also the quantities and weight, which the horses should receive:—

No.	1st. lbs.	2d. lbs.	3rd. lbs.	4th. lbs.
1.—Farinaceous substances consisting of bruised or ground wheat, barley, oats, peas, or beans	5	5	10	5
2.—Bran, fine or coarse	0	0	0	7
3.—Potatoes, boiled or steamed, mashed in a tub with a wooden beater	5	5	0	0
4.—Fresh grains (boiled barley)	6	0	0	0
5.—Hay, cut down into chaff	7	8	10	8
7.—Straw, ditto	7	10	10	8
7.—Malt-dust or ground oil-cake	0	2	0	2
With 2 oz. of salt in each class	30	30	30	30

By this table it will be seen that each horse receives 30 lbs. of food in 24 hours, a quantity which will in all cases be found to be amply sufficient; the addition of two ounces of salt is necessary to assist digestion. It is known that all herbiverous animals in their wild state resort to this condiment wherever it is to be met with, and where native salt abounds. In Cheshire there is a farm on which there is a salt spring, to which the cows daily resort; and this farm is particularly noted for the excellence of its cheese; and it is believed that the tasting of this brine by the cows adds to the flavour of their milk, Of the four classes into which Dr. S. divides his ingredients, for feeding horses, those two, which contain the steamed potatoes are the most recommended.

The Rev. E. Sidney, rector of Cornard Parva, near Sudbury, last week delivered a very able and interesting lecture upon Agricultural Chemistry, to the tenants and friends of Sir John Boileau, at Ketteringham Hall, Norfolk. In the course of his address the Rev. gentleman gave the following valuable recipe for testing the genuineness of guano:—

"Take a given weight and dry it on the hob on letter paper, at the heat of 212 deg. Farh; when it appears dry weigh it; the loss will be water,

deducting from ½ to 1 per cent. for the passing off of ammonia. Take the dried sample, and incinerate it in a porcelain crucible. In good guano the ash will soon appear white on the application of red heat; then weigh it again, and the loss is organic matter and salts of ammonia. Wash the residue with muriatic acid and hot water, until nothing remains but the impurities—sand, clay, &c. In *good* guano these will not exceed 2 per cent., and rarely amount to 1 per cent. If the guano appears mixed with saw-dust, simple washing will be sufficient for its detection."

At the close of the lecture, Sir John Boileau, in presenting the thanks of the meeting to Mr. Sidney, observed—"Let me then, my dear sir, offer to you, on all our parts, our most cordial thanks; but for myself I cannot find words to express my particular obligation, for it is at my request you have come amongst us. Long may you be spared to go about, as you have never failed, like your great Master, doing good; and may we often hereafter have the happiness of seeing you amongst us."

THE HOUSEWIFE.

(From Pictorial Almanac.)

THE SECRET OF WARM FEET.—Many of the colds which people are said to catch commence at the feet. To keep those extremities constantly warm, therefore, is to effect an insurance against the interminable list of disorders which spring out of a "slight cold." Firstly, never be tightly shod; boots and shoes, when they fit closely, press against the sole of the foot, and prevent the free circulation of the blood. When, on the contrary, they do not embrace the foot too tightly, the blood gets fair play, and the space left between the leather and the stocking is filled with a comfortable supply of warm air. The second rule is, never sit in damp shoes. It is often imagined that unless they be positively wet, it is not necessary to change them while the feet are at rest. This is a fallacy; for when the least dampness is absorbed into the sole, in its evaporation it abstracts the heat from the foot, and thus perspiration is dangerously checked. Any person may prove this by trying the experiment of neglecting the rule; and his feet will feel cold and damp after a few minutes: although on taking off the shoe and examining it, it will appear to be quite dry.

MODES OF COOKING COLD BUTCHERS' MEAT. —*Minced beef.*—Cut into small dice remains of cold beef; any gravy reserved from it on the first day of its being served should be put in the stew-pan with the addition of warm water, some mace, sliced eschalot, salt, and black pepper. Let the whole simmer gently for an hour. A few minutes before it is served, take out the meat and dish it; add to the gravy some walnut catsup, and a little lemon-juice or walnut pickle. Boil up the gravy once more, and when hot, pour it over the meat. Serve it with sippets.

Cold Roast beef (with mashed potatoes.)—Mash some potatoes with hot milk, the yoke of an egg some butter and salt. Slice the cold beef, and lay it at the bottom of a pie dish, adding to it some sliced eschalot, pepper, salt, and a little beef gravy; cover the whole with a thick paste of potatoes, making the crust to rise in the centre above the edges of the dish. Score the potatoe crust with the point of a knife, in squares of equal sizes. Put the dish before the fire in a Dutch oven, and brown it on all sides: by the time it is coloured, the meat and potatoes will be sufficiently done.

Bubble and Squeak.—Cut into pieces, convenient for frying, cold roast or boiled beef; pepper, salt, and fry them: when done, lay them on a hot drainer, and while the meat is draining from the fat used in frying them, have in readiness a cabbage already boiled in two waters; chop it small, and put it in the frying-pan with some butter, add a little pepper and salt, and keep stirring it, that all of it may be equally done. When taken from the fire, sprinkle over the cabbage a very little vinegar, only enough to give it a slight acid taste. Place the cabbage in the centre of the dish, and arrange the slices of meat neatly around it.

Lobscous.—Mince, not too finely, some cold roast beef or mutton. Chop the bones and put them into a saucepan with six potatoes peeled and sliced, one onion, also sliced, some pepper and salt: of these make a gravy. When the potatoes are completely incorporated with the gravy, take out the bones, and put in the meat; stew the whole together for an hour before it is to be served.

Beef rissoles.—Mince and season cold beef, and flavour it with mushroom or walnut catsup. Make of beef dripping a very thin paste, roll it out in thin pieces about four inches square; enclose in each piece some of the mince, in the same way as for puffs, cutting each neatly all around; fry them in dripping off a very light brown. The paste can scarcely be rolled out too thin.

Minced veal.—Cut veal from the fillet or shoulder into very small dice; put it into veal or mutton broth with a little mace, white pepper, salt, some lemon-peel grated, and a table-spoonful of mushroom catsup or mushroom powder, rubbed smooth into the gravy. Take out some of the gravy when nearly done, and when cool enough thicken it with flour, cream, and a little butter; boil it up with the rest of the gravy, and pour it over the meat when done. Garnish with bread sippets. A little lemon-juice added to the gravy improves its flavour.

Cold veal dressed with white sauce.—Boil milk or cream with a thickening of flour and butter; put into it thin slices of cold veal, and simmer it in the gravy till it is made hot without boiling. When nearly done beat up the yolk of an egg,

with a little anchovy and white sauce; pour it gently to the rest, stirring it all the time; simmer again the whole together, and serve it with sippets of bread and curled bacon alternately.

Veal rissoles.—Mince and pound veal extremely fine; grate into it some remains of cooked ham. Mix these well together with a white sauce flavoured with mushrooms; form this mixture into balls, and enclose each in pastry. Fry them in butter of a nice brown.

The same mince may be fried in balls without pastry, being first cemented together with eggs and bread-crumbs.

Mutton hashed.—Cut cold mutton into thin slices, fat and lean together; make gravy with the bones whence the meat has been taken, boiling them long enough in water, with onion, pepper and salt; strain the gravy, and warm, but not boil the mutton in it. Then take out some of the gravy to thicken it with flour and butter, and flavour it with mushroom catsup. Pour in the thickening and boil it up, having before taken out the meat, and placed it neatly on the dish in which it is to go to the table. Pour over it the boiling gravy, and add sippets of bread.

Cold Lamb.—Fry slices or chops of lamb in butter till they are slightly browned. Serve them on a purée of cucumbers, or on a dish of spinach; or dip the slices in bread crumbs, chopped parsley, and yolk of egg; some grated lemon-peel and a little nutmeg may be added. Fry them, and pour a little nice gravy over them when served.

Rules for Marketing.—In marketing, the first rule is to purchase chiefly from known and respectable tradespeople, who are likely to go themselves to the best markets, and who have to support the character of their shops.

The second rule to be observed is that of not purchasing inferior articles under the idea of being economical.

A bargain is seldom a prize: and this is especially the case in regard to butchers' meat.

The best meat and the prime parts are unquestionably the cheapest in the end, although the first cost may be the greatest. In coarse and inferior joints there is always too great a portion of gristle, bone, and hard meat to render them truly economic; these may serve as the basis of soups, gravies, or stews, but for roasting or boiling they are wasteful.

Filth and Fever.—Deficient drainage, if not the parent, is most certainly the nurse of fever. Fever is a contagious disease, spreading from person to person, just as small-pox or scarlet fever does; and, like those diseases, haunting over-crowded or ill-drained districts, and all places where, from any cause whatever, the air is foul, and filled with animal and vegetable exhalations. It loves the banks of rivers, the borders of marshes, the edges of stagnant pools. It makes itself a home in the neighbourhood of cesspools and badly constructed drains, and takes special delight in the incense of gullyholes. It has a perfect horror of fresh air, soap, and whitewash; but when left to itself, will linger for years amid scenes of filth and corruption, and hold in deadly embrace all human beings who have the same depraved taste, or are so unfortunate as to be thrown into its company. It is the favourite child of *laissez faire* (in plain English, *let alone*), and bears the same relation to filth that crime does to ignorance.

Bath Bricks.—It is singular that the only known substance from which these bricks can be made is a sludge or mud, deposited by the River Parrott, and that of such deposits it is only that within a mile above and a mile below the town of Bridgwater that will do. They are used, as every one knows, for cleaning knives.

Prize Poultry.—Though poultry form a very insignificant part of the live stock of a farm, yet they ought to be encouraged. In the largest farm, a few domestic fowls pick up what might escape the pigs and be lost; and on small farms, among cottagers, the breeding and rearing of early chickens and ducks, and in some situations the rearing of turkeys and the keeping of geese, are found profitable. There are few who do not relish a new egg or a pancake, not to say the flesh of fowls, and there are some of these comforts which happily can be had in as great perfection in the cottage as in the palace. The French, guided by the philanthropic labours of their great naturalist, Reaumur, have long felt the force of these homely truths, and have carried the breeding of domestic poultry to an extent and perfection unknown to the most enlightened farmers of our own country, and, as a consequence, they have become egg importers to entire Europe; a young chicken has become within the reach of the meanest peasant, and the omelette has taken its stand as a national dish. Convinced by these facts that the breeding of poultry was calculated to add materially to the comforts of our ill-fed poor, the Zoological Society of London, descending from their rigid state of abstract science, determined to offer annual prizes for improved species and varieties of domestic fowl, and generally for any improvement calculated to facilitate the commercial value of the poultry yard. In accordance with this resolution, the Council issued the following prospectus of their wishes:—

The Society offers medals, with the option to the successful candidates, of receiving 2*l* for first prizes, and 1*l* for second prizes, for the several objects mentioned in the following list:—

First and Second Prizes given from Class I. to Class VI. inclusive.

Class I.—Domestic Fowls.—A Male and two Females to be exhibited. A White, Speckled, or Gray Dorking. B.———, C. Old Sussex or Kent. D. Gold or Silver Spangled every day layers (Hamburgh). E. Spanish. Polish, Gold or Silver Spangled Black or White. G. Malay,

or other Asiatic. A. Half-bred cross of Asiatic with any other. I. Any other good variety.

Class II.—Bantams.— A Male and two Females to be exhibited. K. Gold or Silver Spangled. L. Black or White. M. Any other good variety.

Class III.—Ducks —A Drake and two Ducks to be exhibited. N. Aylesbury Ducks, or any other white variety. O. Any other good and large variety.

Class IV.—Geese —In couples. P. Common Geese. Q. Asiatic or Knob Geese. R. Any other good species.

Class V.—Pigeons.—In pairs. S. English Dovecot Pigeons. T. Spanish, Leghorn, or Roman Runts, or crosses of the same. V. Any other good and large variety.

Class VI.—Pheasants—A Male and Female. W. Gold Pheasants. X. Silver Pheasants. Y. Any other species, excepting the common Brown and the Ring-necked.

First Prizes only given in Classes VI. and VII.

Class VII.—Turkeys.—Single birds. Z. White Turkey (male.) AA. Turkey of any other (male). BB. Turkey of any other colour (female).

Class VIII.—CC. Any species of Galinaceous Birds not hitherto bred in this country. DD. Any species of Waterfowl not hitherto bred in this country.

Every exhibitor required to send with each basket a statement in writing of his name and address, and of the letter under which it is to be exhibited, and the price demanded, should he wish to sell through the medium of the officers of the Society; and a full description in writing of the useful qualities of any specimens not generally known, particularly if intended for the prizes left open for unnamed sorts.

Exhibitors not to send more than two baskets under any one description.

Persons possessed of any rare or valuable specimens invited to send them for exhibition, though not intended to complete for prizes.

Prize Poultry.—The Society to have the option of keeping, at its own expense, and under its care, as long as the exhibition remains open, all specimens sent for exhibition, or of returning them at any time, after the prizes are adjudicated. But the Society not to be responsible for any casualties that may happen either at the gardens or on the passage either way.

The appeal thus made has been answered in a style which does great credit to the industry and experience of the competitors. At the time appointed a plentiful supply of "samples" was sent to the gardens; and so equally grown were the rival examples, that in some cases it was difficult to decide between them.

Our engravings exhibit some of the finer sorts exhibited at the first Prize Show; carefully drawn from the life, and so arranged as to give a good general idea of their relative proportions. The Turkey is generally admired for the regularity of its markings—an attainment of high class in the estimation of breeders—and for the clearance and plumpness of his proportions. The Spanish Black Fowl command much attention: their condition is fine, and their feathers most beautiful The "Spangled Dorkings" are the glory of the "knowing ones," who talk exultingly of the finish of their spots, the noble sweep of their tail standards, and the brilliancy and boldness of their combs. The "Silver Spangled" which are nearly white, with elegant dark coloured tails, come in for a large share of aristocratic admiration, and will doubtless become a favourite ornamental variety. The Cochin Bantam—a very rare bird—is regarded as a fancy specimen, and not within the scope of the Society's aim in offering the rewards. It is nevertheless, worthy of adoption by the poor cottar, who should be taught to love beauty, as well as to profit by the merely useful. The Sebright Bantam, the Belvidere Spangled (ornamented like the bearded tit, with bushy whiskers), the Cochin China, and White Spangled varieties, are of extraordintry beauty, and cannot fail to advance the quality of their several families. Our engravings display those most suited for illustration.

A few words upon the management of poultry may be acceptable. The hen house should be on a very dry soil, as nothing is so injurious to the fowls as damp; the place where they are kept should be properly drained, the house paved with brick, and the yard covered with some sound material, as brick rubbish, with sand and gravel, perhaps with a foundation of concrete. Poultry are often confined in a dark, close, diminutive hovel, which is injurious to their health; on the contrary they should have an airy well-ventilated place constructed for them, with four yards for exercise; a few hens, for laying only, are easily kept over an out-house in a convenient situation. Warmth is very essential to fowls, cold rendering them torpid, retarding and diminishing their laying; but too much heat enfeebles them. White hens are more tender, and require to be kept warmer than the dark coloured. It is desirable that the walls of the poultry-house should, if possible, receive a little heat from a chimney, or flue, in some part of a dwelling, which in some cases may be effected with a little contrivance; and it is not well that the poultry-house should be too large for the number of fowls, as they rather prefer being a little crowded together, on account of the warmth they receive from each other: but ventilation should not be neglected, as bad air generates disease. The walls are best of brick, and may be built hollow, the better to confine the heat, a window is best to the east, and another to the west, with wired lattices, and shutters to close in very cold weather. Roosting perches or rails should be placed in convenient situations in the poultry-house; and they should not be round, or smooth, but nearly square, and somewhat

rough, of a size suitable to be grasped by the claws of the fowls. It is important that every part of the building should be finished close without crevices, to prevent the entrance of vermin, and the inside should be frequently whitewashed with hot lime; it is necessary to observe that the utmost cleanliness is necessary in a poultry-house. The litter of the nests and the dung should be frequently removed, for no poultry can thrive where this is neglected; the brick floor should be washed every week. Coops for fattening are likewise requisite, with a trough before for food. Nests are sometimes fixtures, and may be built against the wall, either in one tier or several, according to the number of fowls, and the size of the house. When there is more than one tier, each of those above the ground must have a projecting shelf at the bottom, for the fowls to reach the nests by, and a slanting board leading to it with slips of wood nailed on. Moveable nests are also occasionally useful. These nests should be well cleaned out with hot-lime-water after every hatching, to destroy the fleas which infest poultry, and which are not only annoying to them but also to visitors. It is sometimes necessary to separate some fowls from the rest; such as those which are diseased, which are liable to be ill-treated by the rest, as also strangers, and fowls of particular breeds. Coops and cages are useful for this purpose, which may be made in various ways. Pens also may be provided made of lattice work, each for a cock and four or five hens, to be in during the day to enjoy the fresh air, and yet be protected from bad weather; and these may serve instead of a poultry-yard, when but a few fowls are kept. Places for shelter in case of rain are necessary to be provided; in short it is of great use to make their abode not only healthy, but agreeable to them, in order that they may remain stationary and quiet, and lay and sit when it is desired; as fowls, if they are dissatisfied with their position, are apt to lay in secret places, where it is not always easy to discover their eggs. Among other conveniences in the poultry-yard, there should be small plots of grass or clover planted here and there, if there is space enough; and a few heaps of gravel, sand, or ashes, for the fowls to roll themselves in and cleanse their feathers from vermin.

Poultry eat a great variety of food, all kinds of grain and seeds, and preparations made from them; also most sorts of vegetables, raw or boiled; and they are fond of a certain quantity of animal food, raw or cooked; insects and worms, grubs and maggots, they search for, and devour with avidity, and some persons collect these on purpose for them. Potatoes form some of the most economical food, but it is essential not only that these should be boiled or steamed, but that they are given warm, for fowls dislike them if cold. In many houses they are many well-known scraps and refuse that will serve for fowls, such as crumbs of bread, fragments of pies and puddings, and bits of meat and fish, and vegetables, such as lettuce, endive, cabbage, spinach, turnips, carrots, chickweed and grass. It is generally necessary to give them some kind of grain, as wheat, barley, oats, rye, buckwheat and maize, or meal made from them made into a paste with water. Rice they are fond of at first, but soon tire of it; and much oats, Mowbray says, is apt to sour. Peas and beans are best boiled, and some recommend boiling barley also, but that does not appear to be necessary.

Fowls do not judge so much by taste and smell as by the eye in distinguishing their food, which, when first swallowed, passes into their crop, and after being their macerated goes into the funnel stomach, and then into the gizzard, in which, being a strong sac of the nature almost of gristle, the food is subject to a powerful trituration, as in a mill; this appearing to answer the same purpose as the teeth of Quadrupeds. To assist this effect, fowls pick up and swallow many small pebbles and stones; and it is proper to lay some of them about in the place where they are kept. It is proper likewise to scatter some lime rubbish, as this earth is necessary to supply the calcareous matter which forms the shell of their eggs. The water given to them should be of the purest kind, for foul or bad water is sure to create disease.

The expense of feeding chickens to a condition fit for the table, according to a statement in the 5th vol. of the "Agricultural Magazine," would appear to be very inconsiderable, independently of the trouble and attention required. It is there stated that three pounds of meal of any kind, that will not cost above a penny a pound, made into a paste with water, is sufficient, with such scraps and crumbs as may be easily set aside in a house, to feed and fatten a chicken from the time it bursts its shell till it is fit for the table. It is also said that old fowls, even though fed with food for which money proportionate to the just market value must be paid, will, by their eggs, pay annually at least three times the cost of their subsistence, besides the advantage of the manure which is afforded. If highly fed from the nest chickens will be always fit for the table; and pullets which have been hatched in March will lay plentifully through the following autumn and winter, and may be got ready for the table in February, when their laying is finished. High breeding shows itself not only in the size and flesh of the fowls, but in the weight and substantial goodness of their eggs.

One of the principal objects in the keeping of poultry by a private family is to have fresh eggs. The time for the hens laying eggs depends much upon the warmth in which they are kept, and therefore, in general, on the season. Cold retards or prevents this, and hence the scarcity of eggs in winter. There are two periods of the year when poultry lay most: these are spring and autumn. The approach of the time for laying is denoted by the hens cackling, which she does three or four

days before she begins: and she then appears very restless, seeking about for a place to lay in, which after some time she will choose: but she will require to be well watched, and means must be employed, to induce her to lay in one of the nests prepared for this purpose, for want of which she will be apt to go to some inconvenient place, and it sometimes happens that it is difficult to discover the eggs; but after she has settled herself, she will return again to the same nest. There is a considerable difference in the number of eggs that the different breeds will lay, as well as of the chickens in each breed: Some hens will lay an egg every day; others every other day; and others, only one in every three days. The best hens for laying are generally considered to be the dark-coloured, black, brown or tawny russet; the white are not so good. Pullets, in their first year, if early birds, will probably lay as many eggs as ever after; but the eggs are small, and such young hens are unsteady sitters. The best layers are the Poland breed; the Dorking are likewise good; the latter are remarkable for their tameness and good temper, and possess every good quality required in a small stock. Hens are in their prime at three years old, and after four or five years they lay eggs frequently, and cease altogether on becoming very fat; it is not advantageous to keep them after that period. The eggs should be removed each day as they are laid, as they are liable to be spoiled by the warmth of the hen; they are best kept for a short time in bran, with the large end uppermost. —*Pictoral Almanac.*

Pigs: their Origin and varieties, and Treatment under Disease. With Directions relative to the Curing and Preserving their Flesh. By H D. Richardson. Dublin: James M'Glashan.

We notice with pleasure this valuable little treatise, forming as it does a series of a class of cheap and useful works in connection with rural economy. Mr. Richardson has given through his publishers, much valuable information for the benefit of the former and others interested in the breeding and rearing of domesticated animals. We give the following account of the Chinese Hog:

The Chinese hog is of small size. His body is very nearly a perfect cylindrical form; the back slopes from the head, and is hollow, while the belly, on the other hand, is pendulous, and in a fat specimen almost touches the ground. The ear is small and short, inclines to be semi-erect, and usually lies rather backward. The bone is small, the legs fine and short. The bristles are scarcely deserving of the name, being so soft as rather to resemble hair. The skin itself is, in the Siamese variety, of a rich copper colour, and the hair black, a circumstance which gives to the general colour of the animal somewhat the idea of bronzing. In the Chinese variety the colour is usually white, sometimes black, and occasionally pied. The white sort are deemed preferable, from the superior delicacy of their flesh. The face and head of the Chinese pig are unlike those of any other description of swine, somewhat resembling a calf; hence, this animal, if once seen, will not easily be forgotton.

But the Siamese and Chinese hogs are very good feeders, and arrive at maturity (a most important particular in the consideration of any description of live stock,) and feed fat, so to speak, on less food, and become, so circumstanced, fatter and heavier within a given time, than any of our European varieties. Those kept in the temples of their native country become, from age and feeding, truly enormous masses of moving fat. The Chinese value the hog very highly; indeed they live more upon pork than any other description of animal food.

The Chinese take great care of their swine, and pay particular attention to the quality and quantity of their food, feeding them also at regular and stated intervals. They do not permit them to walk, but when necessary, have them carried from one place to another. It is to this attention that we are possibly to attribute the excellent qualities of Chinese pork; and when it is added, that the Chinese keep the beds and styes of their hogs scrupulously dry and clean, I think that no doubt can longer rest upon the matter. The Chinese hogs that we generally see in this country come from China, principally from the vicinity of Canton, having been brought thence as sea stock. It is scarcely to be regretted that this breed is not sufficiently hardy to thrive in our climate. From this circumstance we are compelled to limit the advantages we might otherwise derive from its introduction to crossing with our own coarser breeds of swine. For this purpose it is truly valuable; and the improved race, thus produced, is infinitely superior even to its Chinese progenitor, the latter, in a pure state, being too small, and hence answering rather for pork than bacon, besides fattening even too easily. Both these objections are amply obviated in the cross, which has further the effect of restoring diminished fecundity.

The most profitable cross to be resorted to was, in the first instance, found to be between the old English, which is not unlike the present Irish breed, and the black Chinese. This cross at once produced a most capital breed, and a little judicious intermixture afterwards, with proper selection of boar and sow, has eventuated in the desired improvements.

Our author then alludes to the various breeds in the different counties of England, and the Continental varieties, from which we select the following:—

The Berkshire hog is of large size, and is usually, nay, almost invariably, of a reddish brown colour, with black spots and patches. The old breed of Berkshire is now, I believe, extinct, and has been so for many years; it had maintained a high re-

putation, nay, I may almost style it, a high degree of celebrity for centuries, and the new or still further improved stock more than equals the promise of its forefathers. Lawrence makes honourable mention of this breed of hog, and furnishes a description of the old breed as he had received it in the year 1790. It was long and crooked snouted, the muzzle turning upwards; the ears large, heavy and inclined to be pendulous; the body long and thick, but not deep; the legs short, the bone large, and the size very great. This, of course, was not anything like perfection; the want of depth of body and the weight of bone, were highly objectionable, but it was altogether a material improvement upon the gaunt and rugged old English pig, which it speedily superseded.

The modern and improved Berkshire was in Lawrence's time lighter both in head and ear, shorter and more compactly formed, with less bone, and higher on the leg. This breed has been since still further improved by judicious crossing; it still has large ears, inclining forward, but erect, is deep in the body, with short legs, small bone, arrives early at maturity, and fattens easily and with remarkable rapidity. In these improvements we recognize the results of intermixture with the Chinese, but also with another variety yet to be described. The colours and marking of the Berkshire hog show him also to owe a portion of his blood to the wild boar. The true and improved breed of Berkshire is of large size. One of the greatest improvers of modern times was Richard Astlew, Esq. of Oldstone Hall. A Berkshire hog fed by Lawton, of Cheshire, measured, from the point of the snout to the tail, three yards, or nine feet, and eight inches; its height at the shoulder was four feet five inches and a half. When living, this huge animal weighed twelve hundred weight two quarters and ten pounds; and when slaughtered, cleaned, and otherwise dressed by the butcher, ten hundred weight three quarters and eleven pounds, or eighty-six stone eleven pounds —over half a ton!

On the points of a good pig, our author observes:

I would now desire to caution the reader against being led away by a mere *name*, in his selection of a pig. A pig may be *called* a *Berkshire* or a *Suffolk*, or any other breed most in estimation, and yet may, in reality, possess none of this valuable blood. The only sure mode by which the buyer will be able to avoid impositions is, to make name always secondary to *points*. If you find a pig possessed of such points of form as are calculated to ensure early maturity, and facility of taking flesh, you need care little what it has seemed good for the seller to call him; and remember that no *name* can bestow value upon an animal deficient in the qualities that I have alluded to. The true Berkshire, that possessing a dash of the Chinese and Neapolitan varieties—comes, perhaps, nearer to the desired standard than any other. The chief points which characterise such a pig are the following:—In the first place, sufficient depth of carcass, and such an elongation of the body as will ensure a sufficient lateral expansion. Let the loin and breast be broad. The breadth of the former denotes good room for the play of the lungs, and a consequent free and healthy circulation, essential to the thriving or fattening of any animal. The bones should be small, and the joints fine—nothing is more indicative of high breeding than this; and the legs should be no longer than, when fully fat, would just prevent the animal's belly from trailing upon the ground. The leg is the least profitable portion of the hog, and we, therefore, require no more of it than is absolutely necessary for the support of the rest. See that the feet be firm and sound; that the toes lies well together, and press straightly upon the ground; as also that the *claws* are even, upright, and healthy. The description of head most likely to promise, or rather to be the concomitant of, high breeding, is one not carrying heavy bone, not too flat on the forehead, or possessing a too elongated snout—indeed the snout should, on the other hand, be short, and the forehead rather convex, recurving upwards; and the ear should be, while pendulous, inclined somewhat forward, and at the same time light and thin. Nor would I have the buyer even to pass over the *carriage* of a pig. If this be dull, heavy, and dejected, I would be disposed to reject him, on suspicion of bad health, if not of some concealed disorder actually existing, or just about to break forth; and there cannot be a more unfavourable symptom than a hung-down slouching head, carried as though it were about to be employed as a fifth leg. Of course, if you are purchasing a fat hog for slaughter, or a sow heavy with young, you are scarcely to look for much sprightliness of deportment; but I am alluding more particularly to the purchase of young stores, the most general, because the most profitable, branch of pig management.

Nor is colour altogether to be lost sight of. In the case of pigs, I would, as in reference to any other description of live stock, prefer those colours which are characteristic of our most esteemed breeds. If the hair be scant, I would look for black, as denoting connexion with the delicate Neapolitan; but if too bare of hair, I would be disposed to apprehend too intimate alliance with that variety, and a consequent want of hardihood, that, however unimportant if pork be the object, renders such animals hazardous speculations as stores, from their extreme susceptibility to cold, and consequently liability to disease. If white, and not *too small*, I would like them, as exhibiting connexion with the Chinese. If light or sandy, or red with black marks, I would recognize our favorite Berkshire; and so on with reference to every possible variety of hue. These observations may appear trivial; but I can assure my readers that they are the most important I have yet made, and that the intended pig buyer will find his account in attending to them

Agricultural Journal

AND

TRANSACTIONS

OF THE

LOWER CANADA AGRICULTURAL SOCIETY.

MONTREAL, FEBRUARY, 1848.

AGRICULTURAL REPORT FOR JANUARY.

The general character of the present winter is different from any we have known in Canada for the last thirty years. On the 1st of January, the temperature was at 55°, with rain; the land was perfectly free from snow—the grass as green as in October—and ploughing might have been executed. Up to the 5th, the weather continued mild, and on that day snow fell. On the 7th, the temperature was 12° below zero. On the 9th, we had the first good sleighing, but the temperature was mild and at 22°. On the 10th, it was 22° below zero, with high wind, drifting, and extreme cold. On the 11th, it was 21° below zero. On the 12th and 13th, in continued very cold, but on the morning of the latter day the temperature rose to 28°, and on the 14th, to 38°, with heavy rain, and very high floods in Montreal and the neighbourhood. On the 15th, temperature at 45°, heavy rain, and flood still rising; 16th, 17th, and 18th, continued mild, and nearly all the snow disappeared from the land. Such is a fair record of the first month of the New Year, and we believe such extreme variations of temperature have seldom occurred in the same period of any former year. So far, it does not appear that any injury has been done to grass-land, and as there is not much fall wheat sown in Eastern Canada, there cannot be much damage done in that way. No doubt the land would be much safer under a covering of snow, than exposed to those great changes, and we may imagine, from this year's experience, how great an inconvenience it would be to the people of this country if we had the mild and open winters of the British Isles. The usual Canadian winter is the most suitable for us. The roads, formed by snow and ice, are to the Canadian farmer what rail-roads are to the people of other countries; they might be nearly as convenient, and without any cost. The snow and ice, therefore, so far from being injurions to us in winter, are as necessary to our convenience and prosperity as the fine weather of the spring, summer, and autumn.

We fear that the ploughed land, where not properly drained, will be injured by much and long continued rain, for the last three months. When ploughed soil is drenched with wet in this way, it is liable to run together into a soft mass, and require ploughing again when it becomes dry in spring. It is generally supposed that fall ploughed land, after exposure to the frost and snow of the winter, will be in a better state of preparation for the seed in spring, than if ploughed in spring; and we have no doubt of the correctness of this opinion, provided the soil has been well drained, and is sufficiently open and mellow when required to be sown. It is useless, however, to expect a good crop on land that is not open and mellow when sown, and any that may not be in this state next spring, should be made so by another ploughing. If our arable lands were sufficiently drained, the frost and snow would have a very beneficial influence upon it; but when not drained, this benefit is lost in the spring, as the soil becomes water-soaked, and when dried by the sun, is baked as hard as bricks. Every new work on Agriculture recommends draining to go before all improvements, and every skilful farmer will be aware how requisite it is. We have no crops in the land now to report of, but we may be preparing what will be necessary to produce good crops, namely,—manure, clean good seeds—and such care of our stock of animals as will insure their usefulness next summer, for the dairy and for the shambles. Cattle must have sufficient nutritive food, in winter, to make them profitable in

summer. We do not propose to farmers, that are not resident in the neighbourhood of our cities, to feed their store cattle as if for fattening; this would neither be necessary nor profitable. They should, however, have sufficient food to keep them in good condition, so that they would not require the best of the summer to recover them and put them in condition. This would be the time to order from the old country, any seeds that might be required for spring sowing. We have seen a favorable report of a spring wheat, known as "Fern Wheat," in England, and we would recommend the importation of a sample of this wheat. We also require new samples of oats and barley from the British Isles, and this would be a favourable year to import them, as the crops were good, and prices low. We can assure those who import *good* samples, that they will find it a profitable experiment for sowing in Canada. The best varieties alone of oats and barley should be ordered, and the variety of oats, known as the "potato oats," we would not recommend for Canada. Perhaps some approved varieties of potatoes might be imported, as change of seed is always useful, if not very inferior quality. The potato, however, is not likely to be very extensively cultivated, while found so liable to disease, nor do we think the risk of extensive cultivation should be incurred. In order to enable farmers to determime the sort of crops that it may be the most prudent and profitable to cultivate, it may be useful to copy some remarks made by Dr. Playfair, at a recent meeting of Agriculturists, at Sir Robert Peel's. These remarks are entitled to attention, and if they are correct, the farmers of Canada will have no cause to regret that they cannot cultivate potatoes extensively. It would be a great loss if we should be deprived of the potato altogether, but there is no reason to apprehend this. By careful management we may hope to produce them in sufficient quantity to give us a reasonable supply for the table.

"As farmers (says Dr. P.) are the cultivators of food for the nation, it is important for them to know, especially in times of scarcity such as we have had, with what crops they can grow the largest amount of food on the same space. In this respect the produce is most variable. Thus whilst turnips, mangold wurzel, &c., will grow nearly 700 lbs. of flesh-forming principles per acre, beans 600, and Italian rye-grass considerably more, you cannot obtain in ordinary crops, more than 350 lbs. of potatoes, peas, and barley; not more than 200 lbs. from an average crop of oats. The variation of produce is, therefore, very considerable. But as profit is naturally and most properly the great object of the farmer, it is equally important to know at what remunerative cost the public become supplied with the equivalent amount of various kinds of food. At London prices, a man can lay a pound of flesh on his own body, with milk, at 3s.; with turnips at 2s. 9d.; with potatoes, carrots, and butcher's meat, free from bone and fat, at 2s.; with oatmeal at 1s. 10d.; with bread, flour and barley meal, at 2s. 2d.; and with beans and peas at less than 6d.—These considerations are far from trival; because, when we consider that an equal amount of nutritious matter can be obtained from one food at less than one-fourth the cost of another, this is only saying that in time of distress, with an intelligent application of money, we can feed four people, where formerly we could only feed one."

The above will enable farmers to estimate the value of crops usually cultivated for the food of man, directly and indirectly. The prices of produce are high and likely to continue so, until we have a new crop. Wheat is worth from 5s. to 5s. 6d.; oats, from 2s. to 2s. 9d.; barley, from 4s. to 4s. 4d.; peas, 4s. to 5s. the minot; hay, 30s. to 35s., the 1600 lbs.; and straw, about 20s. the 1200 lbs. The meat market is fully in propertion, and farmers have cause to be satisfied so far with prices. Good butter sells at a fair price, but we regret that it is seldom put up by the farmer in the careful manner that is necessary for exportation; while there is not more attention given to the curing and packing of this article, we must expect it will not have a high character in the British Market. The description given in a late report by the inspector of butter, of the manner in which butter is put up by the country merchants who buy from the farmers, will account for Canadian butter being often sold as grease in England. Indeed we could not expect it to be otherwise, while all sorts, colours, and

qualities are mixed up together, and packed in unsuitable casks. There is no branch of our husbandry so defective, and consequently unprofitable, as the management of our butter, and there is no cause it should be so but neglect or want of skill. The farmers are not, however, liable to all the discredit of bad quality of butter, as those who buy it from them in small quantities, and pack it without any regard to assorting properly, deserve a large proportion of the blame. We trust this defect will soon be remedied, and that Canadian butter will establish that high character for itself, which it may and ought to have.—*January* 29.

The analysis of Professor Johnston, as given in the Highland Journal, for March, 1845, shews that 100 lbs. of turnips, grown with fresh dung, contains 4 ounces of fat; those grown with guano, furnish only 2¾ ounces, or 100 lbs. of dung would lay on 1½ lbs. of live weight, while the same weight of the guano turnips would add to the live weight only 1 lb., or one-third less. On the other hand, the guano grown roots were the best for young stock. These intimations, given us by science, are confirmed by some experiments made by Lord Blantyre's directions, which show that while a lot of beasts, in consuming a ton of turnips grown with guano, put on 21¾ lbs. of live weight; in eating the same quantity of turnips raised by dung, they increased 36½ lbs. How important practically, then, are these chemical investigations?

The following remarks by the Editor of the Mark-Lane Express, are worthy of the attention of all who would desire to promote Agricultural improvements in Canada:—

In seeking the readiest and most effective mode of promoting agricultural improvement, we have always been of opinion that it will be found in the cultivation of the minds of those upon whom the management of the soil depends, whether owner or occupier. We have ever given a willing support to all measures calculated to diffuse information amongst the adult cultivators of the soil, or to afford an efficient and comprehensive system of education for youth intending to pursue farming as their occupation. Although we anticipate ultimately very great advantages from the establishment of agricultural schools and colleges, we have always entertained the opinion that most important and immediately beneficial results might be obtained by the use in our ordinary schools of simple and well arranged elementary works upon those branches of science, a certain knowledge of which is essential to make an accomplished farmer. The primary difficulty which interposed was the want of such elementary works; the next, the means of inducing the proprietors of schools to use them. Although many such works on different sciences have been published, still we have scarcely met with one which come up to our views of what a purely elementary work ought to be. Most authors aim at something too learned and overloaded with technical terms, fitter for youths advanced in their education than for mere beginners.

It is a remarkable circumstance that Agricultural books have never been considered necessary for the reading or study of our youth at public or private schools, and this circumstance will account for the low estimation in which Agriculture has been held by educated youth. Indeed education has been looked upon as unnecessary for the occupation of a farmer. It is no wonder that such an occupation would have no attraction for young men educated in total ignorance of it. There is not certainly, in the whole course of studies, so interesting or delightful a subject as the science and art of Agriculture, and we have no doubt that youth in general would find it so if their studies were directed in that channel. Youth are not to blame for not reading Agricultural works, because they have never had the opportunity; until very recently, we suppose a book on Agriculture could not be found in any school in Canada. It is most extraordinary that, hitherto, so little attention should have been given to the instruction of youth in the principal business of this and all other countries.

In England, it is computed that an acre of wheat, producing 28 bushels, should yield 1100 lbs. of fine flour, and 344 best loaves of bread, of 4 lbs. each. Be it observed, that the English imperial bushel is about one gallon less in size than the Canadian minot. A quarter of wheat, weighing 480 lbs., gives 314 lbs. of fine flour, besides seconds. What proportion does the yield of wheat in Canada bear to that of England, in flour and bread?

SMALL POX IN SHEEP.—In a late number of the *Mark Lane Express*, we observed a letter from an English farmer, which stated that he had purchased in August last, some imported Spanish sheep that must have been diseased when he bought them. He describes the disease in the following terms:—"The disease showed itself by a breaking out round the nostrils and the face, and the eyes of many were much effected, some completely blind; large scales and pustules by the sides of the face, and all over their bodies. It resembled the small pox, and I have no doubt that it is the disease, it leaving in those that recovered, pits in the face, and on the skin, wherever a pustule had been. Many of them had it so severely, that in two or three days they could not eat, and were starved. To show how very infectious it is, I had 350 South Down lambs in another flock, that had been mixed with the Spaniards, or with any of the diseased lambs, and they broke out with it, from having been penned by the side of the others in the same field, while feeding off rape, clearly showing the infection was carried in the air from one flock to another." There were great complaints by the English farmers, that the imported cattle and sheep have introduced most fatal diseases into the English flocks and herds; and it appears perfectly possible, if some means are not adapted to prevent the importation or landing of infected cattle, that there might be a greater loss of English cattle from infection, than would be equal to the whole of those imported. Our Canadian sheep are very subject to a complaint in the head, and discharge from the nostrils, which reduces them in condition very much, but is seldom fatal. Lower Canada is generally very healthy for cattle and sheep, if provided with sufficient food, and with ordinary attention.

Mr. Stephens, in his "Book of the Farm," shews that in drills, of 27 inches, if turnips singled out to 9 inches apart, attain to only 4 lbs. each, the crop will weigh 46 tons per imperial acre.

When land is suffered to lie in grass for some time, it grows manure for itself. Say that it is sown with red clover and other grasses; after the first two years, the greater part of the clover dies off; its stem and roots decompose, and some, from year to year, are dying, so that at the time it may be taken up again, the land is richer in vegetable matter than a very great application of dung would have made it. This is the great benefit of sowing clover and grass seed in land not intended for crop the following year. Of course, land requires to be in a fertile and clean state before it will grow clover, but if it be in a fit state, the clover will undoubtedly manure it, and improve the soil for a future crop of grain. The loss in Canada is very great from not sowing clover in land that is not in tillage. Clover seed may be expensive, but it is the farmer's fault that he should feel it so, as almost every farmer might grow his own seed of all descriptions. We have seen excellent clover seed grown in Canada, and if one farmer can do it, so can another. The same remarks applies to all other agricultural seeds. The advantage of raising good, clean seeds, would be very great, because we might then be sure they were new and sound. It would not be necessary that every farmer should grow seeds for himself in all cases, but they might grow seeds to supply each other directly, without purchasing through other hands. These matters may be considered of not much importance, but they have great influence upon the prosperity and *net* income of the farmer.

An acre of clover, that between April and July, would grow 30 cwt. of hay, would keep 15 sheep for the time, *i. e.* for twelve weeks and leave the manure on the land.—*Agricultural Gazette.*

Ground Indian Corn, afterwards boiled, is considered in England, to be most excellent food for pigs.

Milch Cows.—A milch cow will eat about one hundred weight of carrots daily, with 10 lbs. of hay. This quantity of roots will afford, or be equal to about eight or ten gallons water. This is the quantity estimated for large cows in England, and it must be an ample allowance; 1 lb. of hay, is equal to 4 or 5 lbs. of common green food; 1 lb. of linseed and bean meal mixed, is equal to 8 or 9 lbs. of green food, and 1 lb. of oat-straw, is equal to 3 lbs. of green food. Barley meal is considered better for feeding cattle, than Indian corn meal, in equal quantities, and we believe oatmeal to be better than either. Linseed, mixed with any of these substances for feeding, will have an excellent effect. Mixed food will be found to answer best for fattening. Raw vegetables, in such a cold country as Canada, will not produce improvement in cattle, in the same proportion as in the British Isles, and therefore, for fattening, they should be cooked or steamed for cattle.

"Farming is, after all, a science of facts; and it is from experiments alone that we must look for some explanation of the laws which must form the basis of theory."

ANALYSIS OF THE HUSK OF BUCK-WHEAT.

"At the late monthly meeting, Dr. Hodges stated that he had been consulted by a member of the Council, as to the value of the husk of buck-wheat for feeding. He gave a statement of his analysis, which will appear in the Reports of the Society, which showed that the dry and apparently innutritious substance contained, of muscle-forming materials, as much an average sample of rice, and that if it agreed with the digestive organ of cattle, it would by a good article to use with other kinds of food. Such analyses are of great interest, and it is by investigations of this kind, conducted for the farmer, that science will be useful to him, and this Society be of advantage to this country."

Buck-wheat is a grain cultivated to a considerable extent in Canada, and the climate and soil are favorable for it. It may not be the most profitable crop, but as it can be sown later than any other grain, it is probable it will always be cultivated to some extent. According to the above analysis, the husk of buck-wheat may be usefully employed in feeding cattle, and this will considerably increase its value as a crop. We did not before suppose the husk was of much value.

It is considered by competent judges, that rats will destroy annually, about a farmer's premises, at least, to the amount of three shillings and sixpence each, and we have no doubt that this estimate is a low one. A farmer may therefore judge of the loss he must sustain by the number of rats about his place, as they exist almost exclusively upon agricultural products, and always those which are the most valuable, when they can get at them. In England, rat-catchers are employed by some farmers, who will undertake, at a certain sum annually paid, to destroy all the rats upon the farm. It is most difficult to prevent rats from doing great injury to crops preserved in barns in Canada, and grain stacked out are seldom on stands. If there were foundations made for stacks, of broken stones, of about a foot in depth, and then the bottom of the stacks surrounded with bricks to the height of about three feet, no rats would get into the stack, provided always the stacks were kept free from everything that would admit of rats climbing above the brick work. Grain could be kept in this way, better and safer than in barns, and the expense of these foundations and brick-work would not be very great. A long rick might be most suitable, and this rick might be divided at every twelve or fourteen feet, and built up in these divisions separately, but all thatched and covered in together. Thus the work of each day could be built up together, and these divisions could be put into the barn separately for threshing. There is one difficulty, and that is, to find men who are competent to build these ricks well and safely; this would

be indispensable, and, we fear, is an objection not easliy got over. Bricks may be expensive, and not conveniently attainable in many places, but there is no doubt they would preserve the grain from rats. Stands might be constructed of wood, with caps, that would be less expensive than bricks, and also protect the grain, provided the rats have no means of climbing to the stack in any other way.

Sheep require about a gallon of water a day. If they get roots in winter, they should have as many as will give them sufficient water, and about 12 lbs. of roots daily would do this; but if less is given, they should have access to water.

The Hon. Mr. Morris has been so kind as to send us a sample of black-skinned barley for sowing, and distribution, and the best description we can give of it is one we copy from the Mark-Lane Express of the 1st of November last:—

Black-Skinned Barley.—The Cheltenham six-rowed black-skinned barley, propagated from three corns, by Mr. Vaughan, tobacconist, Cheltenham, and planted in January, 1843, during a severe frost of six weeks, produced 5,610 corns. It is supposed, from good authority, to be a native of Abyssinia, in Africa, where six-rowed black and white barley grows very luxuriantly. Mr. Churchill, of the Plough Hotel, Cheltenham, having been favoured with a few corns, dibbled them on a small piece of land, in December, 1843; it yielded a very extraordinary crop, independent of the severe cold of the winter 1843-4, and the extreme drought of 1844 summer. After making presents of the black-skinned barley to his Royal Highness Prince Albert, and several noblemen and gentlemen (who expressed their approbation of its superiority and produce), having a few bushels, he was induced, on the 14th Feb., 1846, to drill and dibble it five pecks to the acre; it was reaped 4th July, producing 52 bushels two pecks to the acre, weight per bushel 55½ lbs, but when hummelled by George Hacey's (of Uxbridge) small machine its weight was 58 lbs to the bushel. On the same land, July 10th, were sown white stone turnips, which were large and fit for use on 2nd Sept.; on 28th October Mr C. drilled several acres of vetches and the black barley, which produced him an abundant supply of keep for his cattle early in 1847. In Nov. and Dec., 1846, he drilled several acres, allowing to the acre 85 lbs. for valley land and 68 to the hill land. In Jan., Feb., and March, 1847, he drilled other land, allowing the same quantity and all of which, independent of the very severe frost and cold winds of 1846-7 winter, produced extraordinary crops. The average produce was 68 bushels to the acre, weight per bushel 55lbs. Planting after March in a dry season is uncertain, except to transplant for another year. It appears suited to any description of land, and proves itself good, either in frost or drought. That planted on two acres of poor land was more productive than that planted on well manured and prepared land. Mr. Churchill intends to plant in October the black barley with vetches, and in Nov. for early keep, and to let it remain for harvest, feeling confident in obtaining a good crop. So hardy is the plant that a gentleman in Wolverhampton raised a few corns in his hot-house, and during the severe cold ordered it to be transplanted into open ground, where it came to great perfection. The black barley malts well, and makes good light-coloured ale; its flour is excellent, and makes very nice bread, which keeps moist for weeks, and if mixed with wheaten flour is very superior as to taste, samples of which were, at the request of the Right Hon. the Speaker of the House of Commons, forwarded to him and others. The straw is very strong, fine, and fit for plait, and cuts excellent chaff, and is good for thatching. Mr. Churchill has, since the harvest, received reports from all parts of the country, informing him of the success and approbation of the growers. A gentleman at Lewes, to whom Mr. Churchill gave 17 corns, informs him the produce was 17,235. A tenant of Earl Somers produced 280 ears from 15 corns, containing 20,880 corns. This barley, if sown in woods or forests, will be found excellent keep for game, as after eating it early off it will shoot out again for ripe corn, thus enticing them away from other crops.—*Hereford Times.*

The Royal Irish Agricultural Improvement Society, and the Highland Agricultural Society of Scotland, have very kindly sent the Lower Canada Agricultural Society, their Journals and Transactions, and promise to continue to do so; and as the respective Secretaries of these Societies, have been elected Honorary Members of the Canadian Society, their correspondence will be a great advantage to the latter Society. All communications intended to forward the object for which this Journal is published, will receive every attention. To promote the general good is the sole object of this publication.

The first number of the Journal has been addressed to all the Members of the Provincial Legislature, and to several individuals, who have not ordered it; and should they not be disposed to subscribe to it, they are requested to return the first number with the present one to the Secretary, at Montreal. All who continue to receive the Journal, will be considered subscribers for this year.

The Agricultural Journal will give insertion to Advertisements on all matters connected with lands, stock, implements, and products of Agriculture, on the usual terms. As the Journal will, perhaps, have as large a circulation as any newspaper in the Province, it will be a very favourable medium of advertising any and all matters connected with Agriculture. Advertisements to be addressed to the Secretary of the Society, or to the Publishers, on or before the 15th of each month.

A list of the Members of the Lower Canada Agricultural Society shall be given in the next number.

THE IMPORTANCE OF AGRICULTURAL CHEMISTRY.

"It is a matter of surprise that so little is known upon the theory of Agriculture. Its practice is nearly coeval with mankind, while, as yet, it scarcely exists as a science. Ask the most experienced farmer to explain the principles which govern the routine he is clearly in the habit of practising? Ask him to determine the value of any rotation of crops, or their comparative exhausting powers? Ask him what ingredients must be restored to the soil to keep its fertility unimpaired? or the exact manner in which climate influences produce? His answers will be vague and unsatisfactory. But these, and a thousand other questions of a similar nature, are capable of solution by science, and they must be answered before Agriculture can be said to rest upon a satisfactory foundation."

"Independently of the money that must annually be lost in fruitless experiments, the disadvantages attending the want of fixed rules in Agriculture are many. Numbers of men, possessed of capital, are deterred from farming by the proverbial uncertainty of the profits attending it; and many who follow the profession of Agriculture, and have the means, will not freely embark their money in the improvements of their farms, for want of that knowledge that would enable them to calculate their returns with any degree of certainty." * * * *

"*Practical Agriculture consists in the artificial accumulation of certain constituents to be employed either as food for man, or other animals, upon a space of ground incapable of supporting them in its natural state.*—This definition of Agriculture distinguishes English Agriculture from the system pursued in various parts of the world, where the population is small, and the land of little value, and where they take only the natural produce of the soil without any effort to increase it, and in time abandoning it for a new soil as yet undisturbed. This is the system in America and other new countries.—*Pictorial Almanack.*

THE IRON TUNNEL OVER THE CONWAY.—One of these "wonders of the age," the tubular bridge, is so far advanced towards completion, that its erection across the wide channel of the river Conway is expected in the course of the ensuing month. The site of the bridge is on the south side of Telford's "suspension bridge," close to the wall of the Conway Castle bridge (also by Telford). It will be precisely of the same description as the one to be thrown across the Menai Straits, the Conway bridge consisting of two tubes or tunnels (one for the up and the other for the down line of rail), each 400 feet in length, while the quantity of tubing required for the Menai bridge in upwards of 3,000 feet. It is rectangular in form, consisting entirely of sheet iron, one inch in thickness. The inside, through which the trains are to pass, is 24 feet high and 15 feet wide. The outside height is much greater, being about 30 feet. The top is of two thicknesses of metal, in the corrugated shape, forming a series of circular tubes of about three feet in diameter. This form is considered to offer the greatest resistance to compression. The sides are of sheet iron of one thickness; the bottom has a double thickness, three feet apart, connected by intermediate longitudinal ribs, so as to give the necessary stiffness for the carriages to pass over. The whole mass, weighing upwards of 1,000 tons, will be placed on the abutments at once. The place where it is being constructed is on a huge timber platform, in a curve of the Conway, a few hundred yards from the intended site of the bridge. The important process of testing the machine will be carried forth on the spot where it now lies. Immediately the tube is completed, with the aid of a flood tide and pontoons, it will be raised so as to admit of the platform on which it is erected being carried away. The result is looked forward to with much interest. It was inspected last week by Mr. Stephenson, Mr. Ross, Capt. Huish, Mr. King (the secretary of the Chester and Holyhead Company), and many of the Directors of the Company; on that day the Chester and Holyhead line was opened to the extent of 40 miles.—*Shrewsbury Chronicle.*

WALKER'S PATENT HYDRAULIC ENGINE.—On Saturday, the 24th inst., a number of scientific gentleman, and proprietors of estates in the colonies and at home, assembled in the Wharf-road, City-road, to witness the performance of an hydraulic engine, just completed by Mr. Walker, for the estate of Messrs. Denison, in Berbice. The machine consists of a table, upon which are mounted two steam cylinders, each 11 inches in diameter, and immediately under them are placed two water cylinders 2 feet in diameter. From the cross-heads of the steam piston rods, connecting rods pass down, and are bolted to the platform upon which the water rams, or pistons, are mounted. The water cylinders are open at the bottom, and are immersed in a cast iron well, fitted with sluices, to admit the internal water from the drains, or the external water from the river, so as to be equally available for the purposes of draining or of irrigation. The water cylinders terminate at the upper part in a capacious valve box, communicating with the delivery main, which is also furnished with sluices for delivering the water raised, either inward or outward, according as the engine is employed at the time, for draining, or otherwise. The valves on the water cylinders and pistons are of a novel and excellent construction, and consist of a large number of rolled tubes, which lie in circular seatings, rising and falling within guides, which limit their action. By means of this arrangement, a large and very free water-way is afforded for the passage of the water, while the action of the valve is entirely free from anything like a blow or jar, even when working at a high velocity. The steam cylinders are single acting, the steam being admitted alternately beneath the pistons by a side-valve placed between them, and worked by an eccentric motion on the crank shaft which connects the two steam pistons, and carries a fly wheel, to regulate the action of the machine. After leaving the cylinders, the waste steam enters a hot water box (tubular in its construction,) where the water raised by the cold water pump is made to boil, and in that state sent into the boiler. The engine was constructed for a lift of 8 feet, and with steam of 35 lbs. on the inch, making 70 revolutions per minute—it raised 6,000 gallons of water per minute. This is the second engine completed by Mr. Walker for the West Indies, and the performance of both have given the most unqualified satisfaction to the numerous parties who had an opportunity of seeing them in action. As these engines *throw up* the water—not lift it—the ordinary mode of computing the performance of the engine (by its capacity multiplied by the speed) is inapplicable. At the speed stated, this mode of calculating gave barely half the quantity of water actually raised by the engine, and at an increased speed the disproportion would be much greater. Hydraulic engines upon this principle have been put up by Mr. Walker for the Parliamentary Commissioners for draining in Somersetshire, Norfolk, and in Lincolnshire. At the estate of Mr. Boult, Rendham, in Norfolk, a large tract of land is this year growing the very finest corn, that had never before been cultivated, from the impossibility of draining it by the means heretofore employed for that purpose. By Mr. Walker's engine (with greatly diminished power) this has been effectually accomplished. The gentlemen connected with estates in the West Indies have watched the completion of these machines with great anxiety, and they are now satisfied that these engines will entirely avert the only two evils of any magnitude they have now to contend with—alternate floods and droughts. Mr. Walker's engine is exceedingly compact—occupying a space of less than 4 feet square, and is so simple that any labourer can be taught to manage it in half an hour. The superiority of Mr. Walker's patent engine over the ordinary pump has been most satisfactorily established at Woolwich Dockyard. The caisson there was formerly emptied by means of a pair of very excellent 10-inch pumps, fitted up in the best manner by Messrs. Rennie. With these it took 30 men, working in gangs of 15, and relieving each other every 10 minutes, three hours and a half to empty the caisson. By Walker's engine, 14 men, working in gangs of 7, and changing every 15 minutes, emptied the caisson in one hour and a quarter, and have, upon recent occasions, done it in less, without being fatigued. Now that agriculturists are becoming convinced of the vast importance of effectual drainage, and every mechanical expedient for facilitating the object is received with thankfulness, there can be no doubt that the value of Mr. Walker's invention, as a simple, powerful, and economical mode of raising large quantities of water, will be duly appreciated.—*Mining Journal.*

CROPS IN EGYPT.—One who has examined the magnificent specimens of grain now grown in England is exceedingly disappointed in examining that for which Egypt for thirty centuries has been famous. I collected specimens in 1840; it is exceedingly prolific on the root, but not more so than grain at home thinly sown on rich soil. The stalks of the barley are seldom above eighteen or twenty inches long, each root produces from six to twenty-four stems, fifteen being about the average; there are six rows of grain or pickles on each stalk, each row containing on an average about ten grains, so that the return from the seed is from six hundred to nine hundred. The roots are from six to fourteen inches from each other, and I do not believe that an acre of land in Egypt will yield nearly so much grain by measure or weight as a similar surface in England, both under present cultivation. The barley itself when rubbed out would be little short of unsaleable in average seasons at home, so thin, husky, and poor it was. It is trampled out of the straw by oxen and cleared of chaff by the wind.—*Dr. Buist's Overland Journey.*

COMPARATIVE VALUE OF DIFFERENT KINDS OF FODDER.—The following is the result of experiments made by the principal agriculturists on the continent, and published by M. Antoine, at Nancy. The best upland meadow hay is taken as the standard, at 100 lbs.; and the specified weight of the other kinds of fodder enumerated is required to produce the same results:—

	lbs.
Good hay	100
Aftermath hay	102
Clover hay made when the blossom is completely developed	90
Ditto, before the blossom expands	88
Clover, second crop	98
Lucerne hay	98
Sainfoin hay	89
Tare hay	91
Spurgula avensis, dried	90
Clover hay, after the seed	146
Green Indian corn	275
Green clover	410
Vetches or tares, green	457
Green Spurgula	425
Stems and leaves of Jerusalem artichokes	325
Cow-Cabbage leaves	541
Beet-root leaves	600
Potato haulm	300
Rye straw	442
Oat straw	196
Peas haulm	155
Vetch haulm	159
Bean haulm	150
Buckwheat straw	195
Dried stalks of Jerusalem artichokes	170
Dried stalks of Indian corn	400
Millet straw	250
Raw potatoes	201
Boiled ditto	175
White Silesian beat	220
Mangul-wurzel	339
Turnips	504
Carrots	276
Swedish Turnips	308
Ditto, with leaves on	350
Grain—Rye	54
Barley	54
Wheat	42
Oats	59
Vetches	50
Peas	45
Beans	45
Buckwheat	64
Indian corn	57
Linseed cake	69
Wheat bran	105
Rye bran	109
Wheat, peas, and oat chaff	167
Rye and barley chaff	178

It has been decided by a majority of the Judges, that railway scrip is not a representation of, or security for, money

RUST.—The disease designated *rust*, which afflicts the ears of wheat, particularly in moist seasons, is well ascertained to be a fungous vegetation. It is now clearly ascertained that *rust* arises in the majority of cases from over-manuring the land: the grain is over-gorged with a superfluous exuberance of nourishment, and the latent fungi are from a dormant state brought into active developement, and speedily evince their destructive propensities. The tendency to rust may be neutralized by steeping the seed in a corrosive solution, or it may be more efficaciously obviated by the use of saline manures. Salt is a decided antidote to corruption, and, when applied to the soil, checks and avoids those injuries which plants sustain from the tribe of fungi. These facts, apparently extraneous, lead us to many significant conclusions. The potato is evidently over-fed beyond its strength by a superabundance of nitrogenous and other manures, and like a constipated man, is more liable to be influenced by sudden atmospheric mutations. The potato (*solo-anum tuberosum*) is indigenous to tropical America; and the tubers are small, and scarcely edible in an uncultivated state; and the produce of a single acre of wild potato could be placed in an average-sized measure, while from the metaphorphoses of clime, soil, and cultivation, it has been rendered one of the most valuable esculents; and in England the same area of ground would produce from forty to sixty bolls. With such knowledge of its history, cultivators should endeavour to preserve a common *medium*, and not to force the poor root beyond its natural strength or capabilities. The present general system of manuring, in reference to potato cultivation, can be compared to nothing else than that of an anxious parent overgorging the stomach of a child with nutritious and luxurious dainties, under the philosophic impression of increasing its health.

System of regimen and treatment should be more defined than diagnoses. Salt is recognised as one of the best antisepties to obviate or check the progress of decay. The plan we should advise parties to adopt possessing potatoes above ground, or in berry, would be simple, yet, I surmise, efficacious; they should be kept as separate as convenience would admit; and a contiguity should be avoided, to counteract, if possible, the progress of decay. I should advise that the tubers be placed in layers on a dry floor, the interstices being filled up with saw-dust containing a saline impregnation, to prevent contiguity, and check the tendency to decay. No obstacles present themselves, and the project is practicable. Saw-dust in any quantities may be thus procured by placing it in a capacious vat or tub containing a strong solution of bay-salt; and when a sufficient quantity of saline matter shall have been absorbed, the saw-dust may be removed, spread out, and dried, when it will be adapted for the purpose. I have heard of many using wood ashes for the purpose last year, with signal success.

I think that the usual aration or rotation of crops should be observed with the potato as with the cereals; for too many plant potatoes upon the same land for years consecutively, and this cannot possibly fail to be detrimental. I have this last week had exhibited to me samples of potatoes grown by the allottees of Feargus O'Connor, M.P., on fresh-broke land at Lowbands, Redmarley; and this confirms my opinion, for finer or more healthy tubers I never saw, exempt from blemish or the aspect of disease.

I have to-day seen a quantity of potatoes cooked and prepared for the dinner of a family; and strange to assert, they were afflicted with the "*putrid spots*" observable in 1846-7, the precursors of decay. I have no object in making statements I have the power to substantiate, save that of imparting information; and remain, Sir, your humble servant, H. T.

Gloucester.

Cotton seed.—We have been favoured by a correspondent with a specimen of the cotton seed, which is advertised for sale as food for cattle; and a person who has recently returned from the Mediterranean, where it is generally used, thus writes :—"It has the effect of preserving the bowels in a healthy state, and renders the fat white and the meat tender; and the beef supplied by the contractor to Her Majesty's ships at some of our establishments in the Mediterranean is all fed upon cotton seed. The cotton seed contains a large quantity of oil, and is doubtless highly nutritive; it has a sweetish and agreeable flavour. To give one an idea of the quantity of oil which the cotton seed contains, a seed may be opened and the internal part placed on the point of a penknife, which if ignited will be found to give a clear and brilliant light for the space of about half a minute." From the cotton which adheres to the outer part of the seed a person would be disposed to think that it would be injurious to the animals. However, upon inquiry, we are told that it is given to them in that state without any ill effects.

Enormous Potato.—Mr. R. T. MacIntosh, seedsman, Edinburgh, has just shown us a very large specimen of this year's potato crop, grown at Corstorphine, on the grounds of Mr. John Cook. This tuber weighs two and a half pounds avoirdupois, and measures twenty-five inches and a half in circumference; it seems to be of the Don species.—*North British Mail.*

Great Crops of Wheat.—Mr. Whiting, Monmouth, grew a crop of wheat on a field near Wyebridge, Monmouth, which produced 61 imperial bushels per acre: the field contained 6¼ acres. The seed (Golden Drop, or Kentish High-back) was planted in January last, 5 pecks to the acre. It was an off-growing crop, Mr. W. having given up the land.

Wireworm.—The *Essex Herald* publishes a letter from the Rev. G. Wilkins, to a farmer, who wrote to him, inquiring how the wireworm had been exterminated on the Rev. gentleman's land:—

"Some ten years since, when I came to my living, and commenced cultivating the little land I hold, it was, I may say, full of wireworms. Nothing could have been worse, for my crops were in some places ruined by them entirely. What then, did I do? I adopted a plan which I recommended and published in periodicals many years since, namely, of encouraging moles and partridges on my lands. Instead of permitting a mole to be caught, I bought all I could, and turned them down alive; and soon my fields, one after another, were full of mole-hills, to the amusement of all my neighbours, who at first set me down for half a lunatic; but now several adopt my plan, and are strenuous advocates of it. My fields became exactly like a honey-comb; and this continued even among my standing and growing and ripening crops; not a mole was molested, but I still bought more. This summer I had 14 bought, which I turned down, but they were not wanted; I have nothing for them to eat—all that moles live upon is destroyed—and so, poor things, they must starve or emigrate to some distant lands, and thus get bowstringed by savage men, whom they aim to serve. Adopt my plan, and it will be sure to answer. If you have a nest of partridges, also encourage them; all the summer they live on insects, on wireworms, &c.; and consider how many millions a couvey will destroy in a single summer. Again: always remember that moles feed upon insects, and of which the wireworm is the chief; if you doubt this, open a mole and peep into his stomach. Again: do not fear that moles injure your crops either in field or garden; it is a low and vulgar error to suppose that they root up young corn; they never go anywhere until the wireworms have first destroyed the plants, and then, innocent things, they are punished for others' faults! If you do not like to see their hills, knock them about with a hoe, as I did; it is a healthy amusement, and they will do your lands good. Do not despise my plan because the farmers will not adopt it in your neighbourhood: farmers adopt nothing till driven to it, and nothing that is new and good. Again: have you the aphis, or white bug, on your apple-trees? If so, do not kill ants; my trees were full of aphides, but I found the ants came to my help, and I welcomed them, and now I have not an aphis on my trees."

A series of experiments on sheep-feeding and woolgrowing have just been made in Germany. The following are the results which have been deduced:—1st. The feeding property of the Swede turnip, as compared with the potato, is as 7 to 2; and for the growth of wool, the relative value of these two substances, 20 to 17. 2nd.

That the temperature is of much more importance than is generally imagined, both with regard to quantity of food consumed and the benefit derived from it. To ascertain this fact, one lot of sheep was fed in warm (though well ventilated) sheds, and the rest were fed in the open air, exposed to the weather. The latter required more food in proportion as 30 to 22; and yet the former gave increased weight as 3 to 1. 3rd. It was tried whether lambs, or 2½-year-old sheep, gave the most increase of weight with similar food, and it was found that the increased weight was equal; though in the former case it was principally carcass weight, and in the latter it was wool. The writer concludes the very long and carefully-written accounts of his experiments with the following remarks:—"These experiments have shown most distinctly that sheep are exceedingly sensitive of any sudden change, either in food or in temperature; and that these circumstances, as well as any disturbance, are very disadvantageous to their feeding. If it is wished to secure the full benefit of their food, and the greatest profit of their keep, we must *avoid exposure to the changes of the weather*."—*Sprengel's Journal.*

We are not aware that the practice of feeding sheep in warm folds has ever been extensively acted upon in this country, though the subject has been frequently noticed. Throughout the whole of Prussia and Northern Germany, it is now almost the universal practice. It must, however, be remembered that the winters there are much longer, and the snow deeper, than in this country. It is also one of the maxims laid down by Liebig, in his "Animal Chemistry," that warmth is favourable to fattening; and it is at all times interesting to see the theories of science borne out in practice.—*Trans.*

It would certainly be very useful, if the specific properties of every kind of manure were carefully studied, so as to acquaint us with the quickness, the strength, and the duration of the action of each, in order that we might apply to every soil and every crop exactly, and without hesitation, that which is most suitable. What has hitherto retarded the acquisition of this knowledge is the universal custom of throwing, pell-mell, all the manure of the farm-yard into one receptacle, under the idea that this mixture of manures is the best for all kinds of soil. This practice is well enough in an alluvial soil, where all fields are of the same character; but in general practice, especially upon large farms, where more varied soils come under one cultivation, I would advise not to mix the manures, but to apply to each field that manure which is most suitable to it. In the present state of our knowledge, it seems advisable to recommend the application of the cattle manure to dry sandy, warm situations, and horse and sheep manure to cold, damp soils.—*Giradin des Fumiers.*

"French Agricultural Societies.—Societies for the encouragement of agriculture are as much in vogue in France as in England. The French papers are full of reports of their annual meetings. The following passages, which we translate from a discourse pronounced at the meeting of the Agricultural Society of Cosne, in the Department of the Nievre, by the President, M. Grangier de la Marinière, will show the spirit of these Societies:—'The wonders of English prosperity arise from the national character, and from the laborious habits of a people which has not, like us, a smiling climate to attract it to pleasure. In England every one works. Even the rich cultivate their own estates, and, far from being ashamed, glory in the occupation. From this cause the capital which is drawn from the soil returns to it, and the income of the land, wisely employed, goes to increase its fertility, not to encourage dangerous speculation at the Bourse, or to promote extravagance. All the improvements demanded by the agricultural interest have been conceded—as the removal of the duty on salt, the reduction of the rate of postages, the Scottish system of banking, by which agriculture escapes from the exactions of usury, the amelioration of different races of animals, instruction of every kind—all have been the object of the intelligent liberality of the ministers and of Parliament. At the present time, England—thanks to the unexampled developement of its resources—is the agricultural nation *par excellence*. Down its rivers descend entire fleets of boats, loaded with grain and forage; its panting locomotives draw along, in their rapid trains, cattle and manure, the refuse of cities, the bones of Denmark, and the guano of Peru; everywhere we stumble over agricultural implements and machines—machines for thrashing and winnowing grain, for breaking and grinding bones, for watering the soil. Industry gives its hand to agriculture; and there is no operation, down to the steaming of potatoes, which does not give employment to the mechanical genius of that inventive people. And what is the result of this miraculous organization? It is this: in France, the average product of a hectare of land is 102 f.; in England, it is 214 f.'"

Agricultural Order of Merit.—The King of Prussia is about to create an agricultural order of merit. The decoration of the new order will bear on one side of it the effigy of the royal founder, and on the other the name of the party receiving it, with the legend "*Pour le mérit agricole.*" The order is to be divided into three classes, and will be granted to cultivators who distinguish themselves in the exercise of their profession, as well as to all such as, by their inventions or writings on the subject applicable to it, serve the cause of agriculture. This institution seems to be regarded with much favour on the Continent, since it cannot well fail to contribute much to the development of the agricultural capabilities of a country in which it is adopted.—*Post.*

VENTILATION.—As the better ventilation of every apartment in every dwelling-house, especially those appropriated as sleeping apartments, would be highly conducive to health and comfort, permit me to describe a simple means by which this may be effected, at little expense, in every apartment of our dwellings, as also in shops, schools, hospitals, factories, churches, and other public buildings, as well as in those buildings also appropriated to animals of various kinds, and equally applicable in old as in new buildings.

A farmer, on a small scale, who had made a cellar his dairy, found the milk and butter would not keep sweet, owing to some offensive smell in the cellar, of which, for a long time, he in vain endeavoured to find the cause. The farmer then turned his mind to making a vent or escape for this offensive air; to effect which he made a hole in the ceiling large enough to receive a funnel, the large end or mouth of which he turned downwards, and well plastered to the ceiling, so that air could escape only through the funnel; to the other end he attatched a long small tube, which he conveyed along a joist above the ceiling, and out through the main wall of the building. To the great joy of the farmer, the cellar or dairy was thus rendered perfectly free from smell, and the milk and butter would keep sweet.

Curiosity, however, induced the farmer to mount a ladder and apply his nose to the small tube outside the building, when he found issue from it an excessively offensive stench.

It has lately been discovered that the flesh of animals, which are killed in the middle of the night, will keep much longer than it will when they are killed in the day time; and it is, for this reason, preferred by those who prepare potted meats. This circumstance is very singular; for it proves that the flesh is fittest for keeping when taken from the animal at the time when the respiration is slowest and the temperature of the animal lowest. It is well known that the flesh of animals which have been hard driven will not keep at all. After what has been stated, we need not be surprised, as this quickens the respiration and heightens the temperature.—*Dumas' Chemie.*

Dumas, in his "Applied Chemistry," has urged upon the French Government to undertake the formation of canals, for the purpose of irrigation, on an immense scale, throughout the country.—He thinks this would at once render France independent of any foreign supply of corn and cattle. He attributes the richness of England's pastures, and the beauty of her cattle, entirely to the numerous canals she possesses.—*C. E. D.*

TEMPERATURE OF THE GROUND.—"A few years ago a merchant at Yatutsk, in Siberia, of the name of Scurgin, began to sink a well, but found the ground frozen so hard that he was about to give up the attempt. Admiral Von Wrangel, the celebrated traveller, advised him to proceed until he came to the bottom of the icy ground; he did so, and sent to the Academy of Sciences, of Saint Petersburgh, a report of his proceedings. He had to dig through 382 English feet before he arrived at the loose and unfrozen soil; the whole of the vast intermediate mass of earth being at a temperature below the freezing point, and almost uninfluenced by summer heats; the temperature was about 18° Fahrenheit, 14° under the freezing point; or, in the language of gardeners, 14° of frost, at a few feet below the surface of the ground," and gradually increased with the depth, until the freezing point was attained, at about the depth mentioned above.

THE TUSSAC-GRASS.—At the last meeting of the Philosophical Society of Glasgow, a magnificent living plant or tussac of the *Dactylis cæpitosa*, or tussac-grass, was exhibited from the island of Lewis, where it had been successfully cultivated by Mr. Smith, of Deanston, who superintends the improvements, which, with equal enterprise and munificence, the proprietor, Mr. Mathieson, is introducing into that fine island. In the absence of Mr. Smith, the plant was ably described by Mr. William Gourlie, jun. The seed of the plant, obtained from the Falkland Island, in which the tussac grass is indigenous, was sown in the Lewis, in the spring of 1845, in pure moss, simply delved, with a small quantity of guano thrown on the surface. Thirty-seven plants have come to maturity, two of which carried seed last year. They grew in an enclosure fourteen yards square, with a turf wall six feet in height, situated within thirty yards of the sea. The specimen now exhibited measured three feet in circumference close to the ground, and four feet in height, many of the gracefully drooping leaves being from five to six feet in length. The plant is scarcely less luxuriant than in its native island. The tussac-grass was first brought into notice in this country by Sir William Jackson Hooker, in his notes on the botany of the Antarctic Expedition; seeds and plants of the grass having been sent home by Dr. Joseph Hooper, the botanist to the expedition, and who possesses no small share of the scientific skill and enthusiasm of his distinguished father. In the Falkland Islands it grows in peaty soils, close to the sea. The wild cattle and the horses of these Islands are extremely fond of it, and will even eat dry house thatch when composed of it, the basis of the culms being grateful from their sweetish nutty flavour. There can be no doubt that is the most valuable plant which has been introduced into the country for agricultural purposes for many years, and it is emminently deserving of the attention of proprietors who have waste peaty land on the western shores and Highland lochs. The specimen exhibited to the Philisophical Society is now deposited in the Botanic Garden, where, we are sure, Mr. Murray will be glad to point out to the curious.—*Glasgow Constitutional.*

Illawarra Hops.—Amongst the new productions which, within the last two or three years, have come into the colonial market, the article of hops forms a prominent item. Hitherto we have been entirely dependent on importation from England and America for this essential article to the brewing of sound and wholesome beer. It is no stretch of the imagination to predict that in the course of four or five years our native growth of hops will supersede the necessity of importing them, notwithstanding the great increase of consumption arising from the change of the working classes in preferring a pot of ale or porter to ardent spirits. From an estimate of the quantity of beer brewed in the Australian colonies, the annual consumption of hops cannot be less than fifty tons, with an increasing demand. A sample of colonial hops has been sent us, which we are assured by those who are competent judges may be put in competition with the best imported Kent hops, without losing anything by the comparison. The sample is from the plantation of Mr. T. Jesset, at Dapto, whose growth off a young plantation is not less than a ton and a-half; the ensuing year will, it is reasonably conjectured add at least another ton to the production. A bale, usually called a pocket, of this new production, is, we understand, to be seen at the office of Messrs. Sheppard and Alger, 468, George-street, who have kindly undertaken to show the same to any person who may feel an interest in this important matter.—*Sydney paper.*

Two hints for Farmers.—At the annual meeting of the Roses Agricultural Society last week, T. Batson, Esq., said—"There are two matters of a practical nature which, with your permission, I should like to introduce to your notice. The first is the system of steaming food. I believe that this year it will be impossible to calculate the great advantages that will be gained by the use of the steaming-apparatus. I have myself been able to steam hay perfectly white with mould, which afterwards cattle and sheep would eat in preference to the best hay that could be cut from the middle of a rick. At this moment I am using steamed turnips for pigs; and I have pigs on my farm which for the last month have been increasing in weight at the rate of 20lbs. a week. This perhaps is not very extraordinary; but I think you will not find many instances of pigs increasing in weight to such an extent, and it shows what the system of steaming is calculated to effect. The other matter is the cultivation of mustard. This many persons have tried, and have found it to answer exceedingly well; but I hope to see the day when it will be as common to sow mustard after the corn is cleared off, as it is to fallow it with turnips. Many benefits arise from it; it keeps down the weeds, and is profitable, while the outlay upon it is only about 4s. per acre."

The Cultivation of Beet Root.—Some ship-owners of Dunkerque having addressed a letter to the Ministers of Commerce, demanding the suppression of beet-root sugar, which, they say, ruins the soil and starves the people of the northern departments, the minister has written a reply, in which he admits that the cultivation of beet-root lessons the production of corn. About 55,000 hectares of good land (nearly 140,000 acres) says the minister, are occupied in the cultivation of the beet-root; and that is about the one-hundredth part of the soil devoted to the cultivation of corn, the total quantity of such land being 55,000,000 hectares, which yield annually 69,000,000 hectolitres. If this one-hundredth part, adds the minister, had been sown with wheat, it would have yielded about 6,000,000 hectolitres; and this yield would have caused the imports which have been made and are to be made between the harvest of 1847 and 1848, which are estimated at 14,000,000 hectolitres, to be reduced more than one-half. These facts, the minister admits, support the views expressed by the ship-owners; but he says that considerations of a contrary description may be brought forward, and that the suppression of native sugar would encounter great obstacles. The government, therefore, he observes, cannot take any engagements; but he adds that the question, which is grave and delicate, is the object of all its solicitude.—*Galignani.*

Cultivation of Potatoes.—The effects of different manures on the produce of potatoes is a matter of such interest, that we give the result of certain experiments made by the Rev. Robert Johnson, of Richmond, Yorkshire; the knowledge of which may not be unprofitable to the cultivators of that root. In April, 1847, eight rows of "June reds" were planted, each row seven yards long.

Row.	Manure.	Produce in lbs.
1.	Wood ashes	35
2.	Steeped in Kagesbush's mixture	25—60
3.	Guano	38
4.	Steeped in Kagenbush's mixture	41—79
5.	Compost	31
6.	Steeped in Kagenbush's mixture	28—59
7.	Soot	42
8.	Steeped in Kagenbush's mixture	47—89

It would appear, therefore, that soot is the most efficacious stimulent to the growth of the potato.—*Leeds Mercury.*

A little book "On Manures," recently published in French, concludes with the following sensible maxim:—"The scarcity of manures is the cause of the sterility of a country, and it is useless to improve the mechanical methods of culture if we neglect this source of fertility."

In Flanders it is commonly believed that the first crop exhausts one half of the manure.—*Comptes rendu à l'Académie.*

KUHLMAN'S EXPERIMENTS ON AMMONIACAL MANURES.

In explanation and in continuation of Kuhlman's experiments, we subjoin the following table, showing the value of various substances, in ammonia. Not that this is the sole criterion of value in a manure, but as these experiments have shown the value of ammonia, the table is interesting as showing the quantity of the various substances which are required to replace 100 parts of farm-yard manure by supplying as much ammonia as it will.—(The table is extracted from a much larger one by Payen and Boussingault, in "*Comptes rendus à l'Académie des Sciences.*")

Substances.	Proper weight of the substances which contain as much ammonia as 100 parts of farm yard manure.	Substances.	Proper weight of the substances which contain as much ammonia as 100 parts of farm-yard manure.
Farm yard manure,	100.0	Marl,	78.1
Pea straw,	22.3	Dry flesh,	3.06
Wheat straw,	166.06	Blood,	13.3
Rye straw,	235.2	Feathers,	2.6
Oat straw,	142.85	Horn parings,	2.78
Barley straw,	173.9	Fresh bones,	7.54
Fresh beetroot leaves,	80.0	Charcoal from the refineries,	37.7
Potato stalk,	72.72	Animalized carbon,	36.69
Root of clover,	24.8	Excrements of sheep,	36.0
Linseed cake,	7.69	Excrements of pig,	63.0
Liquid farm-yard manure,	67.7	Peruvian guano,	7.88
Excrements of cow,	125.0	Ichaboe guano	10.14
Urine of cow,	90.9	Richardson's prepared bone manure,	11.23
Excrements of horse,	72.7		
Urine of horse,	15.3		

THE STORING OF TURNIPS.—A correspondent residing in Northumberland states that "his turnips are all too large, and ought to have been stored this week, for the last swelling of a turnip is that which makes the heart soft and hollow, where the first symptoms of decay always begin. Now if the turnip is stored before the last swell, that which would go to size turns to sugar, keeps the centre of the fruit sound and hard, and makes it keep three months longer than those which are allowed to attain the extreme size and growth. He finds by so doing his turnips keep better and longer, and enables him to get in his wheat seed at a more desirable season."—Morpeth, Oct. 16.

DISCOVERY OF A NEW CEREAL.—"The common fat hen *(Atriplex)* forms when young, as we gratefully experienced, an excellent vegetable, as do also the young shoots of the sow thistle *(Sonchus)*. In the vicinity of the Palm Tree Creek, I noticed a grass with an ear much resembling the bearded wheat. With the exception of the cultivated cerealia it had the largest seed I ever met with in grasses; even my black fellow was astonished at its remarkable size."—*Leichhardt's Overland Expedition from Moreton Bay to Port Essington, Australia.*

POTATO DISEASE.—A circumstance came under our notice the other day relative to potatoes, which may not be unworthy of giving to our agricultural friends. A respectable citizen in the High-street, from seeing a paragraph in some newspaper recommending almost any quantity of gas-lime for the preservation of the potato, make up his mind, out of curiosity, to make a trial of the plan. In February last he accordingly obtained as much gas-lime as made his neighbours wonder, and they at once declared his potatoes would be burnt up He, however, persevered, and "clogging" his ground with the lime; they continued to laugh at him, nevertheless he had triumph over them all. All of their potatoes were more or less diseased, while not one of his up to the present time has indicated the slightest taint. In fact they have exhibited the finest perfection of the esculent that has been probably found this year. They consist of three kinds—American earlies, buffs (seed from Yorkshire), and Scotch reds. All were prime: and so much has the individual taken hold of the idea of, "gas-lime," that he has engaged with a neighbouring farmer (running chances mutually,) to plant several acres upon the same principle.—*Perthshire Courier.*

POTATO DISEASE.—It is now beyond any doubt that the potato-rot is extending rapidly in all the districts of Perthshire; even in the Highlands, where little or no symptons of disease appeared in the fields, it is fully worse than it is in the lower districts. It is perhaps worthy of notice that the largest tubers are first affected, and in them it presents itself in its most aggravated form. It is somewhat singular, too, that the produce of foreign seed has uniformly escaped the malady.—*Weekly Register*

THE POTATO DISEASE.—The fears which many entertained at an earlier period of the season, concerning the ultimate spread of disease among the potatoes, are being unfortunately confirmed in this part of the country. We last week had an opportunity of personally examining many samples in the surrounding districts, and can affirm that in no instance which came under our notice is there a prospect of looking forward to this useful esculent, as a means of subsistence, beyond Christmas.—*Staffordshire Mercury.*

CARROTS prove an abundant crop in the neighbourhood of Garstang, and which will well repay the farmers, as the cost of the seed is only about one penny per load of 240lbs. of fine large clean roots, some weighing 5lbs each, without their tops. Carrots are far superior to turnips for making cows produce more milk and butter, and which is also of a far superior flavour.

At a late meeting of the Cleveland Agricultural Society, at Guisborough, Yorkshire, the Earl of Zetland stated that on his Scotch estates he had not one tenant with an acre undrained.

THE CORN TRADE.—The *Banker's Circular* says:—

"It is the opinion of one of the principal operators in the corn trade that we shall import ten million quarters of foreign corn before the end of July next, which cannot cost much less than twenty millions sterling. Observe, we do not indorse this opinion, but pass it on. All we can say is, that it is the opinion of an eminent man in the corn trade, who might still pass for an authority in its movements if he had not so obstinately, violently, and wrongfully opposed our views throughout the last year of consumption, ending with August. Be the quantity of imported corn more or less, there can be little doubt of a large amount being brought to our shores before the end of July, 1848."

RATE OF DISCOUNT.—In order to show the extraordinary character of the present policy of the Bank in maintaining a "prohibitive" rate of discount, the following statement of the amount of bullion in the Bank, and the rate of interest charged on good commercial bills at the undermentioned periods, may be useful:—

	Bullion.	Rate of Discount.
1815.—28 Feb...	£2,037,000...	Five per cent.
1816.—29 Feb...	4,641,000...	Five per cent.
1820.—29 Feb...	4,911,000...	Five per cent.
1826.—28 Feb...	2,460,000...	Five per cent.
1832.—29 Feb...	5,293,000...	Four per cent.
1837.—28 Feb...	4,077,000...	Five per cent.
1889.—October..	2,522,000...	Six per cent.
1840.—25 Feb...	4,311,000..	Five per cent.
1847.—13 Nov...	9,258,520...	Eight per cent. *min.*

The rate of eight per cent. has not been charged by the Bank of England before for upwards of a century and a quarter.

EXTRAORDINARY INSTANCE OF THE TILLERING OF BARLEY.—A Single grain of barley was sown in the garden of Mr. Squires, of Cirencester, in the spring of this year: it produced 75 stems, 50 good ears, 20 indifferent ones, and 1,795 grains of barley. The plant and produce are carefully preserved, and presented to the museum of the Royal Agricultural College.

CHEAP STEAMBOAT TRAVELLING.—This morning the original London, Westminster, and Vauxhall Steamboat Company commenced running their boats every ten minutes between Nine Elms and London Bridge, at the reduced fare of a penny.—*Globe*, October 30.—[They have since extended the distance to Chelsea for the same amount.—ED. M.L.E.]

It has been stated, that 107 parts of wheat, 111 of rye, 147 of oats, 130 of barley, 138 of Indian corn, 177 of rice, 895 of potatoes, 1,335 of turnips, are equal in nutritive power.

A CURE FOR THE POTATOES.—A correspondent of the *Limerick Chronicle* writes as follows:—"I am convinced from practical experience that manure is the principal generator of disease in the potato, and from that conviction I would advise every potato grower to raise his tubers for his own planting upon a piece of good ground, well-worked, but taking care to give no gross food, either vegetable or animal. It is obvious that vitality of the plant is impaired by the blind kindness of nursing it off its legs, and feeding it above its strength; and I contend that the likeliest method of reclaiming that vitality is to give the plant less to do for a time, and study a little closer its natural habits, 'until you get rid of the disease. Can any one tell me if they have seen this parasitical fungatic disease in the root or branch of a potato which had been entirely deprived of manure? or has any one seen the disease in boga, where the gross particles of the manure are absorbed, and held by capillary attraction in the poor spungy moss? I am sure any one must have observed the difference of flavour of the starved potato from the one which is grossly fed; the former is a ball of nutritious flour, when the other is a tasteless fungus."

At the present time, when everything respecting public health is engaging so much attention, perhaps the following statements, by a celebrated chemist, may not be uninteresting: A healthy man will pass about 10 cubic yards of air through his lungs in 24 hours. But there cannot be a greater error than to suppose that a man could possibly exist, if so situated as not to be able to procure any more than this quantity of air. If we imagine a number of men placed in a room where each had only 10 cubic yards of air, instead of breathing there comfortably for 24 hours, symptoms of asphyxia would soon show themselves, and death put a period to their sufferings long before that time could elapse. *This shows the necesssity of ventilating our dwellings.* Numerous experiments have convinced me that a healthy man will require *not less than 6 cubic yards of fresh air per hour.* Suppose then we pass 9 hours in our bed-chamber; in order to render it perfectly healthy it should not contain less than 60 cubic yards for each individual sleeping in it; or, in other words, 4 yards square by 10 feet high. How seldom these conditions are fulfilled!"—*(From the French.)* If there be any truth in the above statement, can we wonder at the fever and sickness in the close streets, crowded workshops, and miserable dwellings of the poor? —(Translator.)—C. E. D.

ARBROATH CATTLE DISEASE.—A most virulent distemper is at present raging here amongst our cattle, which baffles the skill of our most experienced surgeons. Some byres have been completely emptied.—*Dundee Advertiser.*

PIGS, COMMON DISEASES OF, AND THEIR REMEDIES.—For the common diseases of pigs, the following recipe may be employed: ½ lb. of sulphur, ½ lb. of madder, ¼lb. of saltpetre, 2oz. of black antimony; mix these together, and give a table-spoonful night and morning in its food.

HORSES, COMMON DISEASES OF, AND THEIR REMEDIES.—*Coughs or Colds*, are best treated by bran mashes, with ½ a lb. of linseed, and 1oz. of saltpetre each mash.

Gripes or *Colic.*—In the absence of a veterinary surgeon in this dangerous complaint, the following is the best remedy for a horse:— 1½ pint of linseed oil, 1½ oz. of laudanum, given in a little warm gruel.

Powder alterative, for diseased skin or surfeit; mix together ½ of sulphur, ½ of saltpetre, ¼ lb. of black antimony; give a large table-spoonful night and morning in their corn.

Strains and *Wounds.*—Mix 1 oz. of Goulard's extract, 1 oz. of spirits of turpentine, 1 oz. of spirits of wine, 1 pint of the strongest of vinegar; rub this by the hand, or a piece of tow, gently on the part affected.—*Farmer's Encyclopœdia.*

CALVES.—THE MOST COMMON DISEASES OF CALVES ARE: *Navel-ill.*—The best treatment for this dangerous disease is, 1st, to administer two or three doses (about a wine-glass full) castor oil (linseed oil does just as well, and is much cheaper); and, secondly, cordials, which can be made of two drachms of carraway seeds, two do. of coriander seeds, two do. powdered gentian; bruise the seeds, and simmer them in beer or gruel for a quarter of an hour; give these once or twice a day.

Constipation of the Bowels.—For this, doses of castor oil (or linseed oil), of two or three oz., are the best remedy.

Scouring.—The farmer may rely on the following mixture. Let him keep it always by him; it will do for all sucking animals:—

Prepared chalk	4 ounces.
Kanella bark, powdered	1 —
Laudanum	1 —
Water	1 pint

Give two or three table spoonfuls, according to the size of the animal, two or three times a day.

Hoose or Catarrh.—Good nursing, bleeding, and then a dose of Epsom salts, with half an ounce of ginger in it.

COWS.—THEIR COMMON DISEASES AND REMEDIES: *Cleansing Drink.*—One oz. of bayberry, powdered, one oz. of brimstone powdered, one oz. of cummin-seed powdered, one oz. of diapente. Boil these together for ten minutes; give when cold in a little gruel.

Colic.—the best remedy is one pint of linseed oil mixed with ½ ounce laudanum.

Calving.—The treatment before calving is to keep the cow moderately well, neither too fat nor too lean; remember that she commonly has the double duty of giving milk and nourishing the fœtus; dry her some weeks before calving; let her bowels be kept moderately open; put her in a warm sheltered place, or house her; or rather reduce her food; do not disturb her when in labour, but be ready to assist her in case of need; let her have warm gruel; avoid cold drinks. A pint of sound good ale in a little gruel is an excellent cordial drink.

A Cordial is easily made by one oz. of carraway seeds, 1 oz. of aniseeds, ¼ oz. of ginger powdered, 2 oz. of fenugreek seeds. Boil these in a pint and a half of beer for ten minutes, and administer when cold.

Fever.—Bleed; and then give one oz. of powdered nitre and two oz. of sulphur in a little gruel. If the bowels are constipated, give ½ lb. of Epsom salts in three pints of water daily, in need.

Hoose.—See *Calves, diseases of*—only double the doses.

Hoove or *Hoven.*—Use the elastic tube; but as a prevention, let them be well supplied with common salt, and restrained from rapid feeding, when first feeding upon rank grass or clover.

Mange.—½lb. of black brimstone, ½ pint of turpentine, 1 pint of train oil. Mix them together, and rub the mixture well in over the affected parts.

Milk Fever or *Garget.*—Two oz. of brimstone, 1 oz. of diapente, 1 oz. of cummin-seed powdered, 1 oz. of powdered nitre. Give this daily in a little gruel, and well rub the udder with a little goose-grease.

Murrain.—½lb. of salts, 2 oz. of bruised coriander seeds, 1 oz. of gentian powder. Give these in a little water.

Poisons swallowed by oxen are commonly the yew, the waterdropwort, and the common and the water hemlock. 1½ pints linseed oil is the best remedy.

Purge in poisoning.—Either 1lb. of salts in a quart of water or gruel, or 1 pint to 1½ pints of linseed oil.

Redwater.—Bleeding, says Youatt, first, and then a dose of 1lb. of Epsom salts, and ½lb. doses repeated every eight hours until the bowels are acted upon. In Hampshire they give 4 oz. bole *ammonia* and 2 oz. of spirits of turpentine in a pint of gruel.

Scouring.—Give ½ oz. of powdered catechu, and 10 grs. of powdered opium in a little gruel.

Sprains.—Embrocation: 8 oz. of sweet oil, 4oz. of spirits of hartshorn, ½ oz. of oil of thyme.

Sting of the Adder or Sloworm.—Apply immediately to the part strong spirits of hartshorn; for sting of bees apply chalk or whitening mixed with vinegar.

Worms.—Bots: give ½ lb. of Epsom salts with 2 oz. of coriander seeds bruised, in a quart of water.

Yellows.—Two oz. of diapente, 2 oz. of cummin-seed powdered, 2 oz. of fenugreek powdered. Boil these for ten minutes in a quart of water, and give daily in a little gruel.—YOUATT *on Cattle.*

SUMMER'S FAREWELL.

BY MISS ELIZA COOK.

What sound is that? 'Tis Summer's farewell,
In the breath of the night-wind sighing;
The chill breeze comes, like a sorrowful dirge,
That wails o'er the dead and dying.
The sapless leaves are eddying round,
On the path which they lately shaded;
The oak of the forest is losing its robe,
The flowers have fallen and faded.
All that I look on but saddens my heart,
To think that the lovely so soon should depart.

Yet why should I sigh?—other summers will come,
Joys like the past one bringing;
Again will the vine bear its blushing fruit,
Again will the birds be singing;
The forest will put forth its honours again,
The rose be as sweet in its breathing,
The woodbine will twine round the lattice pane,
As wild and as rich in its wreathing;
The hives will have honey, the bees will hum—
Other flowers will spring—other summers will come,

They will, they will: but, ah! who can tell
Whether I may live on till their coming?
This spirit may sleep too soundly then,
To wake with the warbling and humming;
This cheek, now pale, may be paler far,
When the summer sun next is glowing;
The cherishing ray may gild with the light
The grass on my grave-turf growing;
The earth may be glad, but the worms and gloom
May dwell with me in the silent tomb!

And few would weep in the beautiful world,
For the fameless one that had left it;
Few would remember the form cut off,
And mourn the stroke that cleft it.
Many may keep my name on their lip,
Pleased while that name degrading;
My follies and sins alone would live—
A theme for their cold upbraiding.
Oh! what a change in my spirit's dream
May there be ere the next summer's sun shall beam!

The District of Arsunde, in the province of Nordland, in Sweden, was ravaged by a water spout at the latter end of last month. The water spout passed over two forests of pine trees, in which it rooted up or destroyed 4,000 trees, some of them a century old; it carried off the roofs of a great number of houses, conveyed two barns a distance of 3,000 feet, killed a numerous troop of cattle, and caused the death of twenty-two persons. Such a phenomenon is unexampled in the district, which is so far north as almost to touch Lapland.—*Standard.*

Plenty of bread and meat, *pure air, and pure water*—these are the blessings which maintain individual health, ameliorate the general condition of our race, and, at the same time, ensure that equilibrium between physical and moral force which is so universally desired. Physical degradation is always accompanied by corresponding moral degredation; and we know of nothing which will more effectually cause both, than a life spent in ill-ventilated, ill-lighted, and filthy dwellings.—C.E.D.—*(From the French).*

Curious Instance of Sagacity in a Horse.—It has been said that "self-preservation is the first law of nature," and never was that proverb more strikingly or more curiously illustrated than in the case of a horse a few days ago. A contractor on the railway at Sparkford bought two horses, which he put in a field with a bull; the latter, taking a dislike to his neighbours, gored one of them to death, but the other horse became so frightened that he leaped into an old saw-pit which was in a corner of the field, and buried himself up to his head in mud and sawdust. The bull followed him to the pit's mouth, and there stood during the whole night watching his victim cowering beneath him in the pit. In this position they were found on the following morning by the owner of the horses. As soon as the horse perceived his master, he leaped out of the pit and ran to him for protection, exhibiting feelings of gladness at being delivered from the clutches of the dreadful bull.—*Western Flying Post.*

On Listening to Evil Reports.—The longer I live, the more I feel the importance of adhering to the rule which I had laid down for myself in relation to such matters: "1. To hear as little as possible whatever is to the prejudice of others. 2. To believe nothing of the kind till I am absolutely forced to it. 3. Never to drink into the spirit of one who circulates an ill report. 4. Always to moderate, as far as I can, the unkindness which is expressed towards others. 5. Always to believe that, if the other side were heard, a very different account would be given of the matter."—*Carus' Life of Simeon.*

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