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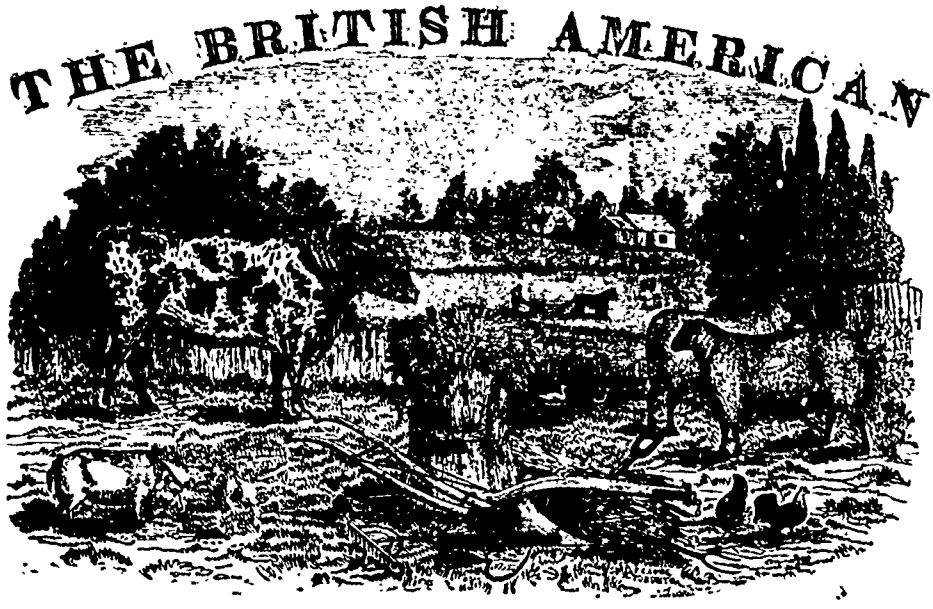

CULTIVATOR.

"AGRICULTURE NOT ONLY GIVES RICHES TO A NATION, BUT THE ONLY RICHES SHE CAN CALL HER OWN."—*Dr. Johnson.*

VOL. III. TORONTO, JULY, 1844. No. 7.

THE CULTIVATOR.

"Agriculture is the great art which every government ought to protect, every proprietor of lands to practice, and every inquirer into nature improve."—*Dr. Johnson.*

TORONTO, JULY, 1844.

MONTHLY CALENDAR.

The season for Haymaking is at hand: see that your tools are in complete order. If you have not already procured a horse hay-rake, lose no time in constructing or purchasing one. It will pay for itself in the item of labour alone in the course of one season, if the hay-harvest be at all extensive; and the satisfaction of having the work executed with efficiency and despatch should be an abundant inducement for every farmer to provide himself with such tools as would effectually secure that most desirable object.

Clover should be cut at that stage of its growth when just going out of flower. To make a good sample of clover-hay, cut early in the morning, and when partially wilted in the swaith, it should be gathered, with a fork, into small cocks; the following day those cocks should be turned bottom side upwards, and then it will shortly be in a fit state for stacking or housing.

It is extremely difficult to law down rules which may be implicitly followed in every instance, and especially in the operations of hay-making; but whether the plan here recommended be adopted or not, we trust that great care will be observed in not exposing too great a surface of grass, whilst undergoing the process of haymaking, to the action of the sun and dews.

Root crops require the most vigilant care during this and the following month. The weeds must be kept down, or else a failure of crop will ensue. Frequently stirring the ground with a hoe has been found to be one of the surest preventatives of their growth. Let it be remembered, in the cultivation of root crops, that one acre, by careful management, may be made to produce as much as two acres would do under the ordinary modes of cultivation. A liberal top-dressing of gypsum, salt, lime, or ashes would promote a healthy growth of leaves, thereby giving strength and vigour to the plant. An experiment with any, or all of these substances, though it be even on a small scale, would test their value, as fertilisers on root crops.

Harvest tools may now be repaired, and put into complete order, for immediate use when wanted. As the Wheat harvest will have commenced by the 25th instant, we would recommend the readers of this Journal to make a few experiments, in order to ascertain the most proper period for cutting wheat. It has been asserted, by a number of the most clever Agricultural writers of the age, that it should be cut as soon as the berry has passed its milky state. Select out the most promising portion of your wheat crop for seed; and if there should be any plants of cockle, chess, or any other noxious weed, they should be separated from the standing grain, thereby securing a pure sample for seed. That portion of the crop intended for seed should not be harvested until it be quite ripe.

If you have any Canada thistles on your estates, cut them close to the surface of the ground, and apply a small quantity of salt to each plant, which will totally annihilate every one that is subjected to this treatment. Wild mustard, pigeon weed, or red root, ought not to be suffered to ripen their seed. Crops containing such weed should be thoroughly cleaned of them, not regarding the damage which may be sustained by the crop during the operation.

TO OUR SUBSCRIBERS.

The readers and friends of this Journal will, no doubt, be surprised, when we announce to them that the Editor has removed to his farm, in Whitchurch, a distance of twenty-six miles from this city. There can be no question but that this change will have a highly-favourable influence upon the character of the work, inasmuch as many of the suggestions and improvements recommended to others will be practised by its Editor and Compiler.

We wish it to be distinctly understood, that the *British American Cultivator* is now, beyond a doubt, established; and that it will continue to improve, both in matter and appearance, until it exceeds, in intrinsic excellence, any Magazine of a similar description published on this Continent. So far as the accomplishment of this object is concerned, no effort shall be spared, on the part of the Editor, to render this Journal worthy the patronage of an enlightened and liberal public; and the hope is confidently entertained that all those who appreciate the enterprize will extend their aid, and exert their influence with their neighbours and friends, to increase the circulation of this useful periodical.

In future, all orders and communications must be sent to the address of the Publisher, Mr. JOHN EASTWOOD, Junr., Toronto.

MARL.

But few of the Canadian farmers have any correct knowledge of the benefits that would result, were they liberally to use calcarious manures, as a dressing upon their land. In many sections of the country, where lime would be most efficacious to the crops, the absence of the limestone-rock would prevent the use of this substance in a caustic state. A bountiful Providence has, however, so wisely distributed His blessings, that, in many instances, in those sections of country where calcarious manures are most wanted, and the limestone-rock most scarce, there are inexhaustible mines or beds of carbonate of lime deposited, for the use of man, in a state that requires no further preparation or expense for the land further than the labour attendant upon leading it to their fields.

As some of our readers may fancy this, above all others, a dry and unprofitable subject, we would embrace this opportunity to inform them, that, to us, it was equally so, until we were convinced of the necessity of obtaining a knowledge of the science, as well as the practice of Agriculture. Upon inquiry and experiment, we found, that, in order to carry out farming operations successfully, it was absolutely necessary that lime, in some shape or other, should be mixed with vegetable matter. After considerable study and observation, we came to the conclusion, that, in a large proportion of cases, where lime was most wanted, it was abundantly intermixed with the subsoil, which lies directly below the surface mould, and only requires the operation of deep ploughing to give as ample a dressing of lime to the soil as could be given were the most expensive sorts used.

It is only within a few years past that chemistry has been brought to bear upon Agriculture, with any degree of certainty or profit: but since the food necessary for maturing plants and vegetables has been correctly ascertained, by men of science and deep research, the farming community would give evidence of their wisdom, by adopting such a method of farming operations as would secure to them large returns for the capital and skill employed.

To ascertain whether the subsoil contains any considerable amount of carbonate of lime, we would recommend, that, when the ploughing operations are being carried on, specimens of the subsoil should be dried, and reduced into a powdered state, after which it should be put into a state of solution with water, and if, upon the application of a small quantity of muriatic acid (or strong vinegar will answer nearly the same purpose), it produces a state of effervescence, or fermentation, it is a sure indication that the subsoil may be brought to the surface, by the operation of deep ploughing, with favourable results to the following crops, and with permanent advantage in improving the texture of the soil.

It should, therefore, be a matter worthy the closest attention of the intelligent cultivator, to ascertain whether the peculiar soil which he cultivates is based upon a stratum of calcarious earth, or whether both soil and subsoil is deficient in this essential substance. If both be deficient, it is obvious that it must be brought to the soil by artificial means. The expense of procuring kiln-burn lime, for Agricultural purposes, is so great, that it is only under very favourable circumstances that its use could be recommended. There are, however, hundreds of cases within our knowledge where lime might be brought into very profitable use.

So sanguine are we that great and permanent benefits will ultimately accrue to the Canadian farmers from the use of Marl alone, that no opportunity shall be lost, or trouble spared, in bringing the subject before the Agricultural community, in such a style as will, we trust, ensure their attention.

Marl is found in a variety of combinations, but that which may be brought into most general use is to be found in a decayed fossil state, at the bottom of marshy grounds, in the neighbourhood of small lakes and stagnant ponds of water, and in the bottoms of ash and cedar swamps. The purest kinds have a soapy-like appearance, and are very unctious to the feel; others appear like a mass of leached ashes, with the exception of the colour, which is most generally white or cream-coloured. Let its colour be what it may, its richness, in lime, will be most readily ascertained by applying the acids previously recommended; and it should be remembered, that its value as a fertiliser chiefly consists in the calcareous particles that it contains. So little value has been placed upon this the best of all fertilisers, that a score of instances have come under our own observation, where farmers have extensive beds upon their estates, and have not known its worth sufficient to value this kind of property at a farthing per acre more, than if no such substances were upon it; whereas, if only a single experiment had been made, upon either wheat or grass lands, it would have added one hundred per cent, to the value of the property, in the eyes of every discriminating individual.

In a part of the country which we lately passed through, and in which there has been a failure in the wheat crops for the past few years, owing to the baneful influence of mildew or rust; we discovered a bed of marl, covering an area of twenty acres; which to all appearance averaged a depth of fifteen feet: the owner of the property, as well as the surrounding neighbours, were not aware that the substance, which we call carbonate of lime, was of any practical use, further than that of making a whitewash for plastered walls, for which purpose it is in very extensive requisition. Upon analysis this

marl was found to contain about 80 per cent. of carbonate of lime, a purer, and more extensive bed is seldom found in any country. If the farmer in the surrounding neighbourhood could be influenced to use it, as a dressing upon their land, at the rate of about 80 bushels per acre, it would increase, especially their wheat, grass, and pea crops, to an extent equal to 100 per cent; and, in fact would prove an invaluable dressing upon the land for any description of crops. This substance, unlike manure, only requires to be added to the soil once in ten or twelve years. It is a sure preventative of rust, in asmuch as the lime it contains acts upon the silica in the soil, and dissolves it into small particles, so that the sap-vessels of the plant can convey it to the stalk, thereby forming a hard outer surface, which prevents the vessels from bursting. It also acts mechanically upon the soil, correcting any acidity it may contain, and changing the stiffest clays into comparatively light loams.

In the South-Eastern States, where this substance has been lately brought into extensive use, the farmers in that quarter set so high a value upon marls, that they pay from 30 to 40 cents per load, and draw it a distance of six or eight miles, and spread it upon their land at the rate of 100 bushels per acre—notwithstanding the high price which it costs them, and the expense which they are subject to in many instances, in drawing it so great a distance; still, through its use alone, has the land in the whole country been doubled in value within the past four years: and those who were anxious to dispose of their lands only a few years since, upon any terms, to emigrate to the Far-West, have become quite satisfied with their situation; and as a means of improving their circumstances, have resolved upon improving their lands through the liberal use of calcareous manures.

In the belief that similar efforts will produce similar effects here, we now, with much confidence, recommend the Canadian farmers to make an experiment with Marl.

For the Cultivator.

FOURTH RIDING OF YORK AGRICULTURAL SOCIETY.

Whitchurch, June, 1844.

The Fourth Riding of York, Agricultural Society, held their Annual Ploughing Match on Saturday, the 15th inst., in a field of Mr. Garden Birnie's, near Newmarket. The weather was very pleasant, the attendance good, and the proceedings throughout of a nature calculated to have a favourable impression on the minds of those in attendance.

The Ploughmen were divided into three Classes. The First Class open to all; the Second Class open to all under twenty-one years of age; and the Third Class open to all persons under seventeen years of age. There were six Ploughmen in the First Class, four in the Second Class, and five in the Third Class,—in all, fifteen.

About sixty perches were allotted to each Ploughman, which was required to be completed in three hours. The size of the furrow slice was nine inches wide, by four inches deep. After the ploughing was completed, the Judges Messrs. George Playter, David Jackson, and James Galloway, proceeded to examine the work, and awarded the prizes as follows, viz:—

FIRST CLASS.

1st Prize,	£2	0	0	Francis Hood, King.
2nd Prize,	1	5	0	G. Pearson, Whitchurch
3rd Prize,	0	15	0	G. Davis, Whitchurch.

SECOND CLASS.

1st Prize,	£2	0	0	J. Breckon, Gwillb'y E.
2nd Prize,	1	5	0	Clinger Willson, do.
3rd Prize,	0	15	0	P. Degear, Whitchurch,

THIRD CLASS.

1st Prize,	£2	0	0	J. Hacking, Jr. Whitc'h.
2nd Prize,	1	5	0	M. Cuny, Jr. Gwillb'y E.
3rd Prize,	0	15	0	W. Willson, Whitchurch.

Mr. John B. Lundy, of the Second Class, would probably have received the second prize for his Class, but, unfortunately, he was taken ill when he had nearly finished his lot, and was obliged to leave the field: his work, as far as it was done, was second in the Class, and well merited a prize; but the regulations required the work to be completed, therefore the committee thought it would be establishing a dangerous precedent to award Mr. Lundy a prize, notwithstanding his illness.

When the Judges had finished their examination, the Ploughmen a number of the members of the Society, and several other gentlemen present repaired to Mr. Hewetts's Hotel, Newmarket, and partook of a good and substantial dinner, such as farmers are partial to, and one that did much credit to our hostess.

After despatching dinner, in about as good a style as the ploughmen executed their work, each took up the line of march for home, apparently highly gratified with the whole proceedings of the day; and I trust, fully resolved to make still further progress in this most ancient, most useful, and most healthy employment—an employment which conduces, more than any other, to the welfare of our country. I would just state, that the Ploughing was, all of it, well executed; and was in the opinion of the Judges, seldom equalled, in the accuracy with with which the furrow slice was proportioned.

The lads of the Third Class deserve especial notice, and great credit for the skill they evinced in their work; some of them nearly equaling those in the older classes.

Yours respectfully,
JOSEPH HARTMAN,
Secretary.

From the Southern Planter.

BRILLIANT WHITEWASH.

Many have heard of the brilliant stucco whitewash on the east of the President's house at Washington. The following is the recipe for making it, with some additional improvements:—

"Take half a bushel of nice unslacked lime, slack it with boiling water, covering it during the process to keep in the steam. Strain the liquid through a fine sieve or strainer, and add to it a peck of clean salt, previously well dissolved in warm water; three pounds of ground rice, boiled to a thin paste, and stirred in boiling hot; half a pound of powdered Spanish whiting, and a pound of clean glue, which has been previously dissolved by first soaking it well, and then hanging it over a slow fire; in a small kettle, within a large one filled with water. Add five gallons of hot water to the whole mixture; stir it well, and let it stand a few days covered from the dirt. It should be put on quite hot: for this purpose it can be kept in a kettle on a portable furnace. It is said that one pint of this mixture will cover a square yard upon the outside of a house if properly applied. Brushes more or less small may be used, according to the neatness of the job required. It answers as well as oil paint for wood, brick, or stone, and is cheaper. It retains its brilliancy for many years.

"There is nothing of the kind that will compare with it, either for inside or outside walls. Coloring matter may be put in, and made of any shade you like. Spanish brown stirred in will make red or pink more or less deep, according to the quality. A delicate tinge of this is very pretty for inside walls. Fine pulverized common clay, well mixed with this Spanish brown before it is stirred into the mixture, makes a lilac color. Lampblack in moderate quantities makes a slate color, very suitable for the outside of buildings. Lampblack and Spanish brown mixed together produce a reddish stone color. Yellow ochre stirred in makes a yellow wash: but chrome goes further, and makes a color generally esteemed prettier. In all these cases, the darkness of the shade will of course be determined by the quantity of coloring matter used. It is difficult to make a rule, because tastes are very different; it would be best to try experiments on a shingle, and let it dry. I have been told that green must not be mixed with lime. The lime destroys the color, and the color has an effect on the whitewash, which makes it crack and peel.

"When walls have been badly smoked, and you wish to have them a clean white, it is well to squeeze indigo plentifully through a bag into the water you use, before it is stirred in the whole mixture.

"If a larger quantity than five gallons is wanted the same proportions should be observed."

This is the third or fourth time that, by particular request, we have published the above recipe, which we have no doubt is an excellent one. But after all, we believe that white lead, especially at the low price at which it can be purchased at present, is the best and most economical pigment that can be used. At any rate, this is the experience of our Northern friends, who are proverbial for their economy and management. They *paint* every thing, except the ladies' cheeks, and that nature does for them in a manner to surpass even the purity of their beautiful cottages.

We intend to furnish directions for the mixing and laying on of white paint, so that every farmer may become his own painter. It is an operation much more simple than is generally imagined.

MANURES.

A FIRST ESSAY, BY S. L. DANA.

SECTION FIRST.

Clearing and Breaking up, and Making Compost.

There is one thing settled in farming, stable manure never fails It always tells. There are no two ways about it. There is here neither theory, nor speculation, nor doubt, nor misgiving "Muck it well, master, and it will come right," is an old proverb. It is considered a fact so well established, that nobody thinks of disputing it There is advantage in asking why barn-yard manure never fails. The answer is easy. It conains all that plants need for their growth. If wetknow then what plants contain, we can easily tell what is in manure. The whole doctrine of manures, then, falls into two plain principles, on which hang all the law and the "*profits*" of agriculture:—

1. Plants contain and need certain substances which are essential to their growth.
2. Manure contains all those substances, which plants want.

If, then, we find out what it is which manure contains, that makes plants grow, we must find out what a grown plant contains. This cannot be done without some little a very little knowledge of chemistry. Do not he startled, reader, I suppose that you may know nothing of chemistry, no, not even its terms. As a very sensible man, who wrote letters on Botany to a young lady, said to encourage his pupil, it was possible to be a very good Botanist without knowing one plant by name, so is it possible to become a good agricultural chemist, without knowing little more than the chemical names of a very few substances You know nothing of chemistry it may be, and as little of law; yet you will go to law, and learn some of its terms by a dear bought experience The law terms are harder to learn than the chemical terms. Now I fear that some persons, who have followed me thus far will shut up the book. It is, say they, all stuff, book-farming, stand beyond us. If one may not understand what manure is without this learning, we may as well begin where our fathers ended, and that was where our forefathers began ages ago. By a little law, however, picked up as a juryman, or witness, selectman, town clerk, justice of the peace, yea, perhaps, hearing an indictment read, men come to understand what a lawyer means when he talks. So too, by a little chemical talk, a man may learn what a chemist means when he talks of oxygen, hydrogen, nitrogen, chlori ·, and carbon; potash, soda, lime, (ah, these are old friends, the very name makes us feel at home again,) alumina, magnesia, iron, manganese, and silex, sulphur, and phosphorus. Here is a long list. Long as it is, perhaps it will be thought worth learning. when you are told, that these are the names of all the substances found in plants, every substance which they want. Out of these is made every plant. Every part of every plant, from the hyssop on the wall to the mountain cedar, contains some or all of these. Be not disheartened. Look over, read the list again carefully; see how many are old names of things which you know. Of the fifteen you know nearly one half by name and by nature. These are potash, soda, lime, magnesia, iron, sulpher. Perhaps you will add, that you know carbon is coal, or rather coal carbon. You have heard from some travelling lecturer at your town Lyceum, that oxygen and hydrogen together warm water. That oxygen and nitrogen form the air we breath; that nitrogen and hydrogen form ammonia, or sal volatile, which gives the sharp smell to the smelling bottle. Besides the thing has been said so often that you must have heard it, that chlorine, the substance which bleaches in bleaching salts, united to soda, makes common salt or if Chlorine is united to ammonia, sal ammoniac is formed. Now by changes and combinations among these fifteen things, nature makes every thing we find in plants. Many of these are invisible as is the air. The substance called chlorine, perhaps you have never seen, but if you ever smelt it you will never forget it. It is often smelt in a piece of bleached cotton, when opened in the shops. It gives the smell to bleaching powder used to disinfect the air, during cholera and other diseases. If you should see it, it would appear merely a faint yellowish green air. It is all-powerful on vegetation. As it forms a part of common salt, say half of its weight, we may dismiss the further consideration of it, by saying, that in some shape or other, chlorine is universally diffused in soil and plants.

The list above may be divided as follows:—First, the airy or volatile, Secondly, the earths and metals: Thirdly, the alkalies; Fourthly, the inflammables. Only the third and fourth divisions require to be explained or defined. The substance called potash and soda are termed alkalies. They are said to have alkaline properties Touch your tongue with a bit of quicklime, it has a hot, burning, bitter taste These are called alkaline properties Besides these they have the power of combining with and taking the sour out of all soda liquids or acid that is, the acid and the alkali neutralize each other. This word alkali is of Arabic origin; its very name shows one of the properties. "Kali," is the Arabic word for bitter, and "al," is like our word super, we say fine and superfine; so kali is bitter; alkali, superlatively bitter, or truly alkali means, the dregs of bitterness I wish, reader, for your own sake, as well as my own, that you should fix in your mind what I said about alkali and alkaline properties. Alkali is a general term. It includes all those substances which have an action like the ley of wood ashes, which you use for soap-making. If this ley is boiled down dry, you know it forms potash Now lime fresh slacked, has the alkaline properties of potash, but weaker, and so has the calcined magnesia of the shops, but in less degree than lime Here we have two substances, earthy in their look, having alkaline properties They are called, therefore alkaline earths But what we understand chiefly by the term alkalies, means potash, soda, and ammonia. Potash is the alkali of land plants; soda is the alkali of sea plants; and ammonia is the alkali of animal substances. Potash and soda are fixed, that is, not easily raised in vapor by fire. Ammonia always exists as vapor unless fixed by something else Hence we have a distinction among alkalies which is easily remembered. This distinction is founded on the source from which they are procured, and upon their nature when heated. Potash is vegetable alkali, derived from land plants; soda is marine alkali derived from sea plants; ammonia is animal alkali, derived from animal substances Potash and soda are fixed alkalies; ammonia is a volatile alkali Potash makes soft soap, with grease, and soda forms hard soap. Ammonia forms neither hard nor soft; it makes, with oil, a kind of ointment used to rub a sore throat with, under the name of volatile liniment. But though there be these three alkalies, and two alkaline earths, I want to fix in your mind, reader, that they all have common properties, called alkaline, and which will enable you to understand their action, without more aid about their chemistry. The inflammables, or our fourth addition, are sulpher and phosphorus; both used in making friction matches. The phosphorus first takes fire in rubbing, and this sets the sulphur burning Now the smoke arising from these is only the sulphur and phosphorus united to the vital part of the common air. This compound of vital air or oxygen, as it is called, and inflammables, forms acids, called sulphuric and phosphoric acids. So if you burn coal, or carbon, it is well known you form fixed air, or carbonic acid. This is, by burning, the coal or carbon unites with the oxygen or vital part of common air, which arises from burning charcoal, has all the properties of an acid. And now let us see what these properties are. All acids unite or combine with the alkalies, alkine earths, and the metals. When acids and alkalies do thus unite, they each lose their distinguishing properties. They form a new substance, called a salt It is very important you should fix in your mind this definition of a salt. You are to confine your idea of a salt to common salt. That is a capital example of the whole class. It is soda, and alkali, united to an acid, or chlorine, or to speak in terms the most intelligible, to muriatic acid. So saltpetre is a salt. It is a Potash united to aqua-fortis. Yet in saltpetre you perceive neither potash nor aqua-fortis. These have united, their characters are neutralized by each other. They have formed a neutral salt. Our list of substances found in plants is thus reduced from things which you did not know, to things which you do know; and so we have saved the trouble of learning more of their chemistry.

We have reduced the airy or volatile into water, formed of oxygen and carbon—as the sulphuric, formed of oxygen and phosphorus; and having thus got water and acids, these unite with all the alkaline, earthy and metallic bodies, and form salt To give you new examples of those I may mention Glauber's salts and Epsom salts, Glauber's salt is formed of soda and sulphuric acid; white vitriol, of zinc and sulphuric acid; plaster of paris, of lime and sulphuric acid, bones, of lime and phosphoric acid; chalk and limestone, of lime, and carbonic acid. These are all examples of salts; that is an acid, or a substance acting the part of an acid, united to an alkali, metal, or earth.

We have thus gone over, in a very general way, enough of chemistry for any one man to understand the chemical nature of manure. You see, reader, that with common attention bestowed for an evening's reading one may learn these chemical terms and their meaning. And now, having learned this first lesson, let us review the ground gone over, fix, once and for all, these first principles in our minds. Let us do this, by a practical application of the knowledge we have gained. Let us analyze a plant. Do not be startled at the word. To analyze, means to separate a compound substance into the several substances which form it. This may be done by a very particular and minute, or by a more general division. It may be done for our present purpose, by separating the several substances of a plant into classes of compounds. You are already chemist enough to undertake this mode of analysis; in truth you have already done it again and again. For our purpose the ancients had a very good division of all matter into four elements. You are reader though perhaps you do not know it, somewhat of a practical chemist. Whenever you have burned a charcoal-pit, what did you? You separated the wood into air, water, and earth.

You drove off by heat or fire the airy or volatile parts of the plant, you left its carbon, or coal; if you had burnt this, you would have left ashes. Now these ashes are earthy parts of plants. If you burn a green stick of wood, you drive off first its water and volatile parts, which form soot. You burn its carbon, and leave its ashes or salt. So that by simply burning, you reduce the substance or elements of plant to water, carbon, salts. All plants then without exception, contain the several substances in our list above, as water, carbon, and salts. To apply this knowledge to manure, we must say a word on the form in which some of these, which we call the elements of plants exist in them. The sap is water; it holds dissolved in it some salts of the plant. This sap or juice, forms a pretty large proportion of the roots, say seventy five to eighty parts in one hundred, of potatoes, turnips, beets, &c. This may be called the water of vegetation. If we dry beet root, or any other plant, we merely drive off this water of vegetation. Now what have we left? To go back to our process of analysis, let us char the dried root We drive off more water and volatile parts. This water did not exist, as such, in the plant. It existed there as hydrogen and oxygen gas. Now this word gas is a chemical term, and it means any substance in vavour, which cannot be condensed into a liquid or solid, at common temperatures. Different gasses may unite, and so become solids or liquids. Steam is not gas, for it is the vapor of water, and immediately returns to the state of water, below 212 degrees. Perfect steam is invisible, as are most gases. The air we breath is composed of two gases, oxygen and nitrogen. We do not see them; we cannot, by cooling or compression, make air take other shape than invisible air. This is the general property of gas, as distinguished from vapor or steam. Oxygen and Hydrogen, in plants exists in just the proportions to form water, but we do not know that they are united in these proportions. We have compelled them to unite, by heating the substance or root. The carbon is by this same process consumed, and you know, has thus formed carbonic acid. Besides this, a portion of the carbon unites with some of the hydrogen of the plant. This forms light inflammable air. Now you may recollect this light, inflammable air, in any stagnant water where plants are decaying. Decay gives exactly the same products, as performed in making charcoal. Decay

is only slow combustion, or burning; no matter whether we char the plant or leave it to decay, we obtain exactly the same products as we did by our analysis, that is carbon and salts.

But because there is not heat enough, we leave by decay, a portion of the hydrogen and oxygen still united to the coal. A slow mouldering fire leaves products more like those of decay. Decay is a slow mouldering fire, hence the products of the day of plants, are very aptly termed mould. It is the product of a mouldering fire, that is an an imperceptible union of the oxygen of the air, with the carbon of the plant. A union is slow, that it gives out neither heat nor light. And yet it is in its results, the same as if fire had actually been seen and felt. Mould contains, then, a part of the carbon, oxygen and hydrogen, or, if you like the terms better, mould and soil consists of the of the water and coal and salts of the plants. Mould is truly manure. If the Mould of soil, as it has thus been defined, were separated from the earthy portions of soil, it would deprive that soil of the power of growing crops. Here then, we come to a broad distinction between soil and manure. The soil is the earth on which plants grow. The mould is the manure of that soil. The soil is the earthy; the mould that is, the carbon and salts, together with the elements of water, are the vegetable part of arable land. But though the earthy part, the soil as it is usually called, acts as a support, on which plants grow, it does not play merely a mechanical part. It was a distinct, decided and important action upon the manure. This action is chiefly chemical; and the fact that soils and manures do mutually affect the growing plant, is proved by the circumstance, that the first plants which grow derived their salts from the earth.

But the chemical action of soil does not belong to the present discussion. We can understand what manures are, without deciding how they act. We can theorize and guess about the how of their action, when we have learned what they are. That is chiefly what the farmer wants to know. He wants to know what manure is, and what is likely to act as a manure. To these points we shall confine our present remarks. Pointing out the great principles, applicable to all manures, the nature of soils, and the manner in which they affect manures, must be left for another essay. The vegetable or manure part of soil alone, is now to be considered. Consider now, reader, the great results to which our analysis has led us; that a slow, mouldering fire gives us the same products as are formed by decay; that this is only a slow, mouldering fire, and that mould its product, is the natural manure of plants It follows, that whatever substance produces mould, that is, water, carbon, and salts, may be used instead of this natural manure, Among the salts found in mould, some are volatile, and are easily dissolved by water. Others are fixed, that is not evaporating easily or not at all, and are quite insoluble in water. Now the first, or volatile and soluble, first act when in manure. They act quick, and are quickly done. The fixed and insoluble act slower, they last longer. The volatile act in the early stages of growth, the fixed in the latter periods. The great differende in the action of manures depends almost entirely upon the salts which they contain. These are the most important and essential. It is not so much the vegetable mould of manure which you want, as the salts which it contains. This a well settled principle. Land which has undergone the skinning process, old, wornout, and run out land, still contains a very large portion of vegetable matter: the coal or carbon of mould without its salts. Give this wornout land salts, and you may, by these alone bring it back not only to its virgin freshness, but you may even by salts alone make it fairer and richer than it was before man ever cultivated it.

Too much stress has been all along laid upon the kind of soil. Go now to "Flob," in West Cambridge, no better farms or farmers look the world through. Ask any of these practical men, whether the sandy or gravelly soil of Old Cambridge Common, or even of Seekonk Plain, can be made to bear as rich crops as their land? They will tell you yes. If your land will hold manure, muck it well, and it will be as good. Now, this holding of manure belongs to the subject of soil, and throwing that out of consideration, it is found that even lands which do not hold manure, which have been worn out and exhausted by cropping, hold yet a great deal of insoluble coal of wood. They want salts, and something which will make this inert, dead vegetable matter of the soil, active. The mould is active in proportion, as it is more or less dissolved by water. Mould consists of two parts: one is dissolved, though only in a slight degree, by water: the other is not dissolved by water. Some substances, however, do render mould very easily dissolved by water. Hence if you reflect a moment on these facts it will be seen that mould itself, being valuable in proportion to the ease with which water dissolves it, that whatever substance so enables mould to dissolve, may be added to it, and thus increase its value. Now the things which do this, are the alkalies, soda, potash and ammonia. These principles being well settled, we may enter on the consideration of each different manure. They will be valuable in proportion to the quantity and kind of salts, each contains, added to the power they may have by producing their decay, substances which make their mould soluble. Now this last property, that is, the property of producing a substance which makes mould soluble, depends wholly upon the nitrogen of the manure. This nitrogen in the process of decay, becomes volatile alkali or ammonia. The word ammonia, will occur so often in the present discussion, that we should endeavour to fix some definite idea to it. You need not, reader, be acquainted with all its chemical properties, I suppose every man who will be likely to read these remarks, has smelled ammonia. It has been already said, that it gives the peculiar pungent smell to the common smelling bottle.

This is volatile ammonia. It is always formed when animal or vegetable bodies decay.

It has been already said, and is now repeated in order that it may never be forgotten, the ammonia is formed by the union of hydrogen and nitrogen. Hydrogen and nitrogen, two airs, nitrogen forming four fifths of the air we breathe let that be borne in mind, and without going into the chemistry of ammonia further, or the mode of calculating how much ammonia a pound of nitrogen will make, it may be laid down, and must be remembered too, that every pound of nitrogen must be called two and a half pounds of sal volatile, or smelling salts of the smelling bottle Two and a half pounds of volatile ammonia formed from one pound of nitrogen. If then we can determine, as chemistry may, how much nitrogen exists or forms a part of manure, two and a half times that will be the ammonia of that manure. If then the vegetable part of manure is as we said, valuable and active, in proportion to its degree of being dissolved by water, then, as ammonia gives it this easy solubility, we may safely say, that the quantity of nitrogen in manure, is the measure of the value of its vegetable part. One thing must be guarded against not to place from this view the whole of the value of manure upon its ammonia Remember that manure consists of carbon, water, and salts. The whole are equally essential to its action. There is no eye, nor ear, nor foot, nor hand in manure, which may say to the other members, "I have no need of thee." The whole act together; but it is not to be doubted, that ammonia is the heart of manure, and keeps up the healthy circulation among the other members."

Good Farming.—It may be laid down as a standing rule, and as a guide to direct our exertions, that all good farming, the whole of that process by which bad land is to be converted into good, or land naturally good and productive is to be continued in that state, is comprised in the three following operations of husbandry. 1. To carry off all stagnant and superfluous water by means of judicious draining. 2. To return through the medium of manure, the strength and fertility which has been extracted from the land by cropping. 3. To eradicate all noxious weeds, that the strength of the manure may be thrown into the crops and not into the weed.—*Rawstone's Remarks on Lancashire Farming.*

From the Albany Cultivator.

HAY MAKING.

We think it best to cut grass for hay, as near as possible to the time when it is in full bloom. Of course if it is cut when most of it is in this state, some may be little past, and some may not have quite reached full bloom. We know there has therefore been some difference of opinion as to the stage grass should be when it is cut, but we believe the experience of the best farmers is in agreement with the position above assumed. Those who are in the habit of curing herbs, cut them when in this stage, because it is known that they contain at that time the most of that peculiar principle from which they derive their efficacy and value. The saccharine of sugar principle, which constitutes one of the chief sources of nutriment in herbage, is found in the greatest quantity at the period of bloom. It may sometimes be expedient to cut grass before it has reached this state; particularly where it falls down, and is in danger of souring or rotting. When this happens, it should be cut, whatever state it may be in, because if it remains on the ground it will spoil, and the fermentation which takes place, will destroy the roots. Another great advantage in cutting grass before the seed forms, is that the roots are not so much exhausted, and the after growth is much more vigorous.

In some parts of the country, it is the practice to mow the grass and let it lie untouched on the ground, "thro' sunshine and shower," for several days before it is stacked or put in the barn. It is quite common to begin Monday and continue to mow till Saturday, when with hand-rakes and horse-horse, all turn in, take it up and stack it; and this is done too, without much regard to the state of the weather at the time it is raked, or to what it may have been after it was cut. The appearance of the animals which are fed on hay thus managed, is evidence enough of its worthlessness.

After grass is cut and partly dried, it ought never to be exposed to dew or wet. The best way is to spread out the mown grass evenly, as soon as the wet has dried off from the spaces between the swathes, and before the dew falls in the evening, rake it and put it in cock. Where the crop is heavy considerable time will be gained in making, by this plan. If it is only wilted when it is put in cock, it will in a short time undergo a *sweat*, which will much facilitate its making when it is again opened to the sun. Many good farmers believe that it will make more in two days, if it is kept in cock twelve hours, than it will make in three days without being put in cock.

In making clover hay, we are decidedly in favour of not exposing it much to the sun after it is first wilted. We speak from experience, having practised various modes, and we are certain that it may be made with less labour, and that it is of far superior quality when cured in cock, than in any other way When the swathes are a little wilted, pitch them into cocks—laying it up in such a manner that it will stand the weather, which is easily done by the exercise of a little care. Examine the hay from day to day to see how the prsecss of curing advances, and when it seems to be so well made that with what it will dry in handling, it will do to put in the barn or stack, turn over the cocks, loosen up the bottoms a little with a fork, and proceed to load it. Clover hay thus cured is not likely to heat in the mow or stack, and from having every leaf and head saved, will be found to be very nutricious and much relished by all animals. In fact, we believe that clover hay properly cured, will make more flesh, milk, or butter, than any other hay, pound for pound. The prejudice against clover has arisen from the bad manner of curing it. Knocked about as it frequently is, wet and dried by turns, it loses its leaves and heads, and becomes little else than a mass of tasteless stems, which no animal will eat,

Loss of Time in Ploughing.—When ridges are 78 yards in length, no less a space of time than 4 hours and 39 minutes is spent in turnings in a journey of 8 hours, whereas when ridges are 274 yards long, 1 hour and 19 minutes is sufficient in the same length of time.—*Code of Agriculture.*

From the Albany Cultivator.

CHEESE MAKING.

A subscriber who makes a large quantity of cheese, has requested to be informed how some of the celebrated English cheese is made. After having looked over all the principal papers on the subject within our reach, we have concluded we cannot give the information sought, in a better form, than by presenting an extract from the "Report of a Gloucestershire Vale Farm," published by the "British Society for the Diffusion of Useful Knowledge," in the third volume of "Husbandry." The occupant of the farm is Mr. Drinkwater S. Hayward, whose management generally, we should think from the Report, is of the best character :—

Management of the Dairy.—It is acknowledged by every one at all acquainted with the subject, that the quality of cheese does not depend upon the superior richness of the soil or the fineness of the herbage; for cheese of the first quality is often made from land of inferior description, and from herbage of a coarse nature. Nor does the quality of the cheese depend on the breed of the cows, for cheese of the best quality is made from the milk of cows of all the different breeds in the country; we think it principally depends on the manage- of the cows as to their food, &c. of the milk in converting it into cheese, and of the cheese, till it is fit for market.

The following circumstances are injurious to the quality of cheese; allowing the cows to get rank or ill flavoured grass or hay, these conveying a bad flavour to the milk and cheese; allowing the cows to run and heat themselves; driving them far to be milked, which makes the milk froth much in milking; carrying the milk from the place of milking to the dairy; and allowing the milk to remain long after it is milked, before it is set with the rennet.

The greatest dependence is upon the dairy maid; and the chief art of making cheese of the finest quality, lies in her management. The superintendence of the dairy invariably devolves upon the farmer's wife. Mrs. Hayward attends to every minute circumstance in this department, and the following is a report of the information she has obligingly furnished respecting the whole economy of the dairy of this farm :—

The management of a dairy should be conducted with the greatest regularity. Every operation should be performed precisely at the proper time. Either hastening or delaying the execution of it, will cause cheese of an inferior quality to be made of milk from which the best may be obtained. A dairy maid is selected for skill, cleanliness, and strict attention to her business. Her work commences at four o'clock in the morning, and continues without intermission till bed time.

The dairy house should be kept at a temperature of between 50 and 60 degrees; and the dryer it is, the better, as both the milk and cream retain their sweetness much longer in a dry than in a damp air. Every time therefore, the dairy is washed, it is dried as quickly as possible.

The milkings should be as near as possible at equal divisions of the day, commencing at about four o'clock in the morning and three in the afternoon The milking should be finished in an hour. The dairy maid sees that the milkers do their duty, and that all the cows are milked clean; for the milk that comes last is richest; and besides, if the cows are not clean milked, there will be a gradual diminution of the milk, perceptible daily; for these reasons, the greatest care is taken that the cows are clean milked.

The cheese tub being put in its place in the dairy, the ladder is put across it, and a large thin canvass cloth covers the whole tub and ladder, to catch any of the milk that may drop from the pail, and to prevent dirt from falling into the tub. Above this, and upon the ladder, is placed a hair cloth sieve, through which the milk is strained. If the milk should not be of the temperature of 85 degrees, a portion of it is put into a deep tin kept for the purpose, and placed in a furnace of hot water in the wash house, by which means the whole is warmed to the proper degree. It is of the utmost moment to attend to this, for if the milk is not warm enough when the rennet is put into it, the cheese will be 'tender,' and will bulge out in the edge, which spoils its appearance, and a great quantity of sediment of small curd will be found in the whey, which is so much of the curd lost. If, on the other hand, the milk is too warm, it will cause the cheese to 'heave' or ferment, which injures both its appearance and quality. When the milk is sufficiently warm, the colouring matter, (if any is used) and the rennet are put into it, after which, the tub is covered with a woolen cloth for at least an hour. Rennet or runnet is made from the stomaches of calves, here called 'vells.' Mrs. Hayward never uses them till they are twelve months old; for if they are not old, the rennet made from them causes the cheese to 'heave' and become full of 'eyes' or holes. She prepares the rennet from them by adding to every six vells, two gallons of brine and two lemons. The lemons do away with any disagreeable smell, and give the rennet sweetness and agreeable flavour. Twenty or thirty gallons of it are made at a time, as it is found to be much better when made in large quantities. It should never be used till it has stood for at least two months.

When the curd is sufficiently firm for breaking, it is gently and slowly cut with a three bladed knife down to the bottom of the tub, (the knife being about fourteen inches long,) both ways, or at right angles and around the sides of the tub. The cuts should be about an inch apart. When it has stood five or ten minutes, to allow it to sink a little, and the whey to come out as clear as possible, some of the whey is dipped out of it with a bowl, and the curd is cut a second time with the three bladed knife, very slowly to begin with; for if the cutting is done hurriedly, a great quantity of sediment of very small curd will pass through the seive and be found in the whey, and there will also be an increase in the quantity of whey butter, which should have been in the cheese, and the value of the butter thus obtained will not compensate for the loss of credit the cheese will sustain from the abstraction of the butter from it. The cutting being therefore performed very slowly at first, and with the strokes of the knife at considerable distances from each other, is gradually quickened, and the strokes are taken nearer and nearer every time. At last, one hand, with the skimming dish, keeps the whole in motion turning up the lumps suspended in the whey, while the other, with the knife, is in constant motion, cutting them as small as possible; and this operation is continued till no more lumps are brought to the surface, and the whole mass is reduced to one degree of fineness. This process may occupy a quarter of an hour.

The curd is now allowed to stand a quarter of an hour, and being thus sufficiently settled, the whey is taken from it with the bowl, and poured through a very fine hair seive, placed over the whey leads. When the greatest part of the whey has been separated from it, the dairy maid, folding over a portion of it, and beginning at one corner, goes around the tub, cutting the curd into lumps, and laying them on the principal mass, by which operation the mass is carried all round the tub, and most of the remaining whey escapes between the cut fragments as they lie and press upon each other. From time to time the whey is taken from the tub, and put through the seive into the whey leads.

The curd is then cut into vats (hoops) and pressed down with the hands; the vats being covered with cheese cloths about one yard and a quarter long of fine canvass, are placed in the press for half an hour, when they are taken out and the curd cut into thin slices, and put into a mill fixed on the top of the tub, which tears it into very small crumbs, as small as vetches. This mill, which is of Mr. Hayward's construction, is a great improvement in the making of cheese, not only as it saves the dairy maid the most laborious part of the process, that of squeezing and rubbing the curd into small crumbs with her hands, but as it allows the fat to remain in the cheese which the hands squeeze out.

In its pulverized state it is customary with most dairy maids to scald the curd with hot whey; but Mrs. Hayward considers cheese richer when made without scalding the broken curd, this washing the fat out of it. She, therefore, without scalding it, puts it into the vats and presses it closely together with the hand in filling them. In making the double Gloucester cheese, particular care is taken to press any remaining whey from the curd as the vats are being filled, and they are filled as compactly as can be done with the hand, being rounded up in the middle, but just so much so that the whole can be pressed into the vats. Cheese cloths are then spread into the vats, and a little hot water is thrown over the cheese cloths, which tends to harden the outside of the cheese and prevent it from cracking. The curd is now turned out of the vats into the cloths, and the vats being dipped in the whey to wash away any crumbs or curd that may cling to them, the curd is inverted, and with the cloth around it, is again put into them. The cloths are then folded over and tucked in, and the vats, as they are filled, are put into the press one upon another. The bottoms of the vats are smooth and a little rounded so as to answer the purpose of cheese boards, which, therefore, are only wanted for the uppermost vats, or when the other vats are not quite full. The vats are allowed to remain under the press about two hours, when they are taken out and dry cloths are applied, which with double Gloucester cheeses, should be repeated some time in the day.

Salting, and Salting Presses.—The vats, when the clean cloths are given, as just mentioned, are changed from the single press to the one next to it, and placed in it, one upon another, as before. They remain in this press till the cheeses are salted, when those made in the evening, take the place in the press of those made in the morning, and those made in the evening, are in their turn displaced by those made the following morning; the cheeses of the last making, being always placed lowest in the press, and those of the other makings, rising in it according to the priority of making. [From this, we infer that a beam press is used, into which several cheeses may be put at once, the older ones which require the greatest pressure being put nearest the fulcrum.] This order is also observed in the other two presses, the last, or newest making in each, being lowest, and each making having next above it that which was made last The cheeses pass through the three presses in this order, advancing a step in their progress at each 'meal' or making, till, at last, in four or five days, they come out of the presses and are put on the shelves. They are generally salted at the end of twenty four hours after they are made, though this is done by some at the end of twelve hours. The salting should never be begun, till the skin is all closed, for if there be any crack in the skin of the cheese at the time of salting, it will never close afterwards. The salting is performed by rubbing with the hand both the sides and the edge of the cheese with finely powdered salt. The cheese, after this, is returned to the vats and put under the press, care being always taken according to what has been said, to put the newest cheese lowest in the press, and the oldest uppermost. The salting is repeated three times with the single and four times with the double Gloucester, twenty four hours being allowed to intervene between each salting. After the second salting, the cheeses are returned to the vats without the cloths, that the marks of the cloth may be entirely effaced, and the cheese may get a smoothness of surface and 'keenness of edge,' which is a peculiarity of Gloucestershire cheese. The double Gloucester remain in the presses five days, and the single, four; but in damp weather, they should remain longer, The quantity of salt generally used is about three pounds and a half to a hundred weight of cheese. The size of the double Gloucester cheeses is commonly about five to the hundred, or twenty pounds each,

and that of the single, about eight to the hundred, or twelve and a half pounds each.

The Cheese Room.—When the cheeses are taken from the salting presses, they are put on the shelf in the dairy for a day or two, where they are turned once in twelve hours. They are then taken to the cheese loft to make way for the new ones. In the cheese room either on the floor or on the 'cheese rack,' they are turned once every day, and in general, in a month from the time they were taken out of the vat, they are ready for cleaning, which is done by scraping them with a common knife. The cheese, if intended for the London market, as is generally the case, is rubbed, after being cleaned, with a paint of Indian red or Spanish brown, or a mixture of both and small beer. It is rubbed on with a woollen cloth. After being painted, it is turned over twice a week, and oftener if the weather is damp; and as soon as the state of the paint will permit, the edge of the cheese and about an inch of each side, is rubbed hard with a cloth, at least once a week.

Characteristics of the true Gloucester.—The marks of true Gloucester cheeses, are 'the blue coat' which arises through the paint on their sides, and which is a sure sign of their richness and sweetness; the yellow, golden hue of their edges, a smooth, close and wax-like texture; a very mild and rich flavor, not crumbling when cut into thin slices, nor parting when toasted, with the oily matter they contain, but softening, without burning. If cheese has been soured in the making, either from being too long in hand, or from want of attention in scalding the utensils, nothing will cause it to assume the blue coat. If the curd is salted when ground down before being put into the vats, has the effect of giving a skin to each of the particles of curd it comes in contact with, which prevents them from intimately uniting; and although the curd may be pressed together and make good cheese, yet it never becomes a smooth, close, solid mass, like that which is salted after it is made; but is of a loose texture, and crumbles when cut; and although it may be equally fat, yet in toasting, the fat melts out of it, and the cheesy part burns. The skin of the cheese, too, is not tough and solid, but hard and brittle, and when examined, seems to be formed of many irregular portions.

From the Boston Cultivator.

DESTROYING LICE ON CATTLE.

Messrs Editors:—About a year ago if I rightly remember, I read in your paper an article on the means of destroying these troublesome insects, by applying a mixture of lime and ashes to the floor on which the cattle stands and rests. My cattle doubtless like all others, have ever been more or less infested with this hateful species of vermin. I have tried various expedients for their extermination, such as Scotch, or yellow snuff, lard, decoction of tobacco, &c., none of which have ever proved sufficiently adequate to effect the object intended.

Last fall when my cattle came to the barn, I resolved upon trying lime & ashes, as preventative of lice amongst them. Accordingly I mixed them in about equal quantities, and spread them upon my stable floors; directly under my cattle's fore feet. When what I had applied at first was exhausted, I then made another application of the mixture, and so continued to do during the winter.

As to the effect this practice has had in preventing lice amongst my cattle, I now candidly state that they were never more free from them, than they are this spring.

I will mention one fact in confirmation of the utility of this application for destroying lice.

In Febuary last I purchased a pair of four year old cattle that were exceedingly lousy. I was particular to keep the floor very well strewed with these ingredients, and upon examining them several weeks after, I could not discover a solitary individual of the numerous host remaining.

The lime of which I made use, had lain open to the action of the atmosphere until it was reduced to a powder, or nearly so, before using. M.

EDITORIAL REMARK.

The above seems to be a very simple and effectual remedy, and it may be practised without the least injury to the cattle, which is not the case with some remedies used, such as mercurial ointments, a decoction of tobacco, oil, &c. In cold weather oil has a bad effect, as it keeps the hide moist for a long time, readily conducting off the animal heat and producing a chill. As vermin are so distructive to the peace, comfort, and thrift of cattle, no pains should be spared in guarding against them, and applying a remedy wherever they make their appearance.

REMEDIES FOR DISEASES OF CATTLE.

Sting of the Adder, or Slow-worm.—Apply immediately strong spirits of hartshorn. For sting of bees, apply chalk or whitening mixed with vinegar.

To take Film from a Horse's Eye.—Blow loaf sugar and a little salt into the inflamed eye, and in most cases it will be relieved. Sassafras buds pounded, and put in water, to stand till it becomes nearly as thick as cream, applied to the eye, is an excellent remedy for inflammation.

To relieve Colic in Horses.—Rub spirits of turpentine on the brest of the horse; and if he be drenched with it he will be relieved. Horses should never be put to severe work on a full stomach, more horses are hurt by hard driving after a full feed, than by a full feed after hard driving.—*English Farmers' Journal.*

Redwater.—Bleed first, and then give a dose of 1 lb. Epsom salts, and a half pound dose repeated every eight hours, until the bowels are acted upon. In Hampshire they give 4 oz of spirits of turpentine in a pint of gruel. Blackwater is the concluding and commonly fatal stage of redwater.

Cleansing Drink.—1 oz. of bayberry powdered, 1 oz of limestone powdered, 1 oz. of cummin seed powered, 1 oz. of diapente; boil these together for ten minutes. Give when cold in a gruel.

Colic.—The best remedy is one pint of linseed oil, mixed with ½ oz. of laudanum.

A good cordial is 1 oz. of carraway seed, 1 oz. annis seed, ½ oz of ginger powdered, 2 oz. fenegreek seed powdered. Boil these in a pint and a half of beer for ten minutes, and administer when cold.

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

Dysentery.—The same as for diarrhœa.

Fever.—Bleed: and then, if the bowels are costipated, give half a pound of Epsom salts in 3 qts. of water daily, in gruel.

Hoove or Hoven.—Use the elastic tube. As a preventive, let them be well supplied with common salt, and restrained from rapid feeding when first turned to grass.

Mange.—Half a pound of block 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.—2 oz, brimstone, 2 oz diapente, 1 oz. cummin seed powdered, 1 oz powdered nitre. Give this daily in a little gruel, and well rub the udder with a little goose grease.

Murrain.—Half a pound salts, 2 oz bruised coriander seed, 1 oz of gentian powdered, Give these in some water.

Poisons swallowed by oxen are commonly the yew, the water dropwort, and the common and the water hemlock. 1 pint and a half of linseed oil is the best remedy.

Sprains.—Embrocation: 1 oz of sweet oil, 4 oz of spirits of hartshorn, For the sting of bees supply chalk or whiting mixed with vinegar.

Worms—Bots.—Give half a pound Epsom salts, with 2 oz. coriander seed, bruised, in a quart of water.

BOTS IN HORSES.

BY JOHN SHERRY.

To the Editors of the Prairie Farmer:

I send you a valuable recipe for the cure of bots in horses. I have used the prescription and seen it used in several cases, and with the best success in every case:—

Take a piece of tin, say six inches long and two inches wide; punch one end full of small holes, like a grater; turn up the upper tip of the animal's mouth, and scarify it well with this grater; then take gunpowder, wheat flour, and salt, in equal quantities—say of each a tablespoonful—and mix them together; then take some in your hand and rub it on the scarified lip Rub hard, frequently taking the mixture on your hand, and continue the rubbing for fifteen minutes; in fifteen minutes more the animal will go to eating, if the remedy is not applied too late. Lately I have heard it stated that saltpetre brine will destroy a live bot sooner than any other liquid medicine. Let the increduluous try it.

Oak Dale Farm, Iowa,
April, 1844.

To the Editors of the Prairie Farmer:

I herewith send you some items extracted from time to time from the London Magnet, Bell's Weekly Messenger, the Weekly Despatch, the Chelmsford Chronicle, and the Norwhich Mercury, which I hope you will find interesting for your readers.

Yours, &c. JACOBUS.

CURCULIO.

Mr. John G. Kenrick, of Newtown, in the magazine of Horticulture, gives the following remedy for the curculio. We observed that Mr. — exhibited at the Horticultural Rooms, very fine plumbs last season:—

"Having heard salt recommended, as a protection against the curculio, I concluded to make a trial of salt lye, having a quantity at command. The yard contains about one eight of an acre, in which I have about one hundred trees. In the spring, I had about two loads of meadow mud, well saturated with lye, evenly spread and spaded in. (The year previous about the same quantity of dock mud was applied in the same way.) About the first of June, I put in a load of about five hogsheads (salt lye) in addition, pouring it from a large watering pot, about two common sized pailsful to each tree, saturating the whole ground in the yard; and so powerful was the application that there was not a weed to be found the height of two inches during the season; every tree bore well, and many of them were so completely loaded with fruit, that I was obliged to stake them to prevent their breaking down. There were a very few curclious which found their way up the trees, but not a *twentieth* part enough to thin out the fruit as they ought to have been, which prevented their attaining the size they otherwise would have done."

Soaking Corn in Muriate of Ammonia.—Dr. Samual Webber gives an account in the New England Farmer of several experiments which he made last season with muriate of ammonia. He dissolved a small piece of the common sal ammoniac of the druggists, estimated at four or five grains, in about half a coffee-cup of water, and threw into the solutation a handful of corn, which, after having remained four or five hours, was planted. He planted this soaked corn in hills, side by side with that which was not soaked. He made four different experiments, which are reported in considerable detail. In all cases, the soaked seed produced considerably the best yield—generally at least one-third more. The land was light and dry, and for several of the experiments he purposely took the poorer spots. The corn suffered with drought; but in all cases that from the soaked seed manifested a decided superiority; so much, indeed, that it was noticed by strangers, who knew of no difference in the seed.

(Continued from the June Number)

AN EASY METHOD OF MANAGING BEES, IN THE MOST PROFITABLE MANNER TO THEIR OWNER.

The above is the title of a neatly printed manual, which was lately presented to us by Mr. David Leslar, of Churchville, Home District. Mr. L informs us that he has followed out in detail the directions of the author, and his efforts have been crowned with success.

If the Canadian farmers would turn their attention largely to the management of Bees, the article of honey would very shortly become a considerable item on our list of exports to England. Immense quantities of honey is imported yearly into the Mother Country from Holland and other continental countries, all of which might be supplied from this country if the people would only turn their attention to the business.

RULE 2.

To Preventing the Depredations of the Moth.

All such stocks as are infested with the moth, will manifest it as soon as warm weather commences in the spring, by dropping some of the worms upon the bottom board. Let the apiarian clean off the bottom board every other morning; at the same time strew on a spoon full or two of fresh, pulverised salt.

Immediately after a second swarm has come forth from a hive, the same season, the old stock should be examined; and if swarming has reduced their numbers so low as to leave unoccupied combs, the apiarian should take the Queens from the swarm, and let them return to the old stock.

Third and fourth swarms should always have their Queens taken from them and the bees returned to the parent stock.

Remarks.—"This insect (the moth) is a native of Europe; but has found its way into this country, and naturalized itself here."—*Thatcher.*

This unwelcome visitor has interested the attention and called forth all the energies of the most experienced apiarians of our country, and of many of the greatest naturalists in the world. Their movements have been observed and scrutinized by the most learned—their nature has been studied; various experiments have been tried to prevent their depredations; but, after all, the monster in gaudy hue marches onward, committing the greatest havoc and devastation, with but little molestation. I have lost my whole stock at least four times since 1808, as I supposed by the moth I tried all the experiments recommended in this and other countries, that come to my knowledge; but, after all, I could not prevent their ravages.

In 1830, I constructed a hive (which was patented in 1836) which I supposed would afford all the facilities for managing bees in every manner that their nature would admit of, and at the same time render their cultivation most profitable to their owner. By constructing windows of glass, on every side of the hive, nearly the size of its sides, and darkening them by closing doors on the outside of the windows, which may be opened at pleasure, I have been able to discover many important facts, both in relation to the nature and economy of the bee, and its enemy the moth; but, probably, much yet remains to be learned concerning both.

The moth, when first discovered by the common observer, is a white worm or maggot, with a reddish crusted head, and varies in size according to its living. Those which have full and unmolested access to the contents of a hive, will frequently grow as large as a turkey-quill, and an inch and a half in length. Others are scarcely an inch in length when full grown. They have sixteen short legs, and taper each way from the centre of their bodies.

The worms, like the silk-worm, wind themselves into a cocoon, and pass the dormant (chrysalis) state of their existence, and in a few days come out of their silken cases perfect winged insects or millers, and are soon ready to deposit their eggs, from which another crop will be raised.

The miller or perfect moth, is of a grayish color, from three-fourths of an inch to an inch in length. They usually lie perfectly still in the day time, with their head downwards, lurking in and about the apiary. They enter the hive in the night, and deposit their eggs in such places as are uncovered—of course ungarded by the bees. These eggs hatch in a short time, varying according to circumstances, probably from two or three days to four or five months. At an early stage of their existence while yet a small worm, they spin a web, and construct a silken shroud, or fortress, in which they envelope themselves, and form a sort of path, or gallery, as they pass onward in their march; at the same time being perfectly secure from the bees in their silken case, which they widen as they grow larger, with an opening in their front only, near their head, they commit the greatest havoc and devastation on the eggs, young bees, and all that come in their way as they pass.

When the moth has arrived to his full state of maturity, he makes preparation to change to a miller, by winding into a cocoon, as has been already explained. The miller is surprisingly quick in all its movements, exceeding by far the agility of the quickest bee, either in flight or on its legs. Hence the enemy becomes so formidable that the bees are easily overcome, and soon fall a sure prey to him.

Now, in order to remedy the evils of the moths, and prevent their ravages, and at the same time aid the bees in their prosperity, and make them profitable to their owner, I found it necessary to use a hive differing materially from the old box, and commenced operations in the one already referred to, (called the Vermont Hive,) in a course of experiments which have produced results perfectly satisfactory. From 9 seasons' experience in its use, I have not the least doubt that bees may be managed to the best advantage, and without ever being materially injured by the moths.

A bee-hive should be made in a perfectly workmanlike manner, so as to have no open joints; the boards should be free from shakes and cracks because the bees will make their tenement perfectly tight, so as to exclude light and air, by plastering up all such places as are left open by the workman, with a kind of mortar, or glue, of their own make, which is neither honey nor wax, but is very congenial to the growth of worms in the first stages of their larva state, and being secured from the bees by the timber, in a short time they are able to defend themselves by the silken shroud.

Now the miller enters the hive and makes an incision into the bee-glue, or cement, with her sting, and leaves her eggs. These eggs hatch there, and the brood subsist on the glue until they have arrived so far towards maturity as to enable them to encase themselves in a silken shroud; and then they move onward.

Now, unless the bees chance to catch him by the collor, or nape of his neck, while feeding, and drag him out of his place of concealment, they will be compelled to cut away the combs all around his silken path, or gallery and drag out the worm and his fortress all together. At the same time, the bees are compelled to cut away the combs so far as to destroy many of their young broods in making room to remove the annoyance. I have known them to cut away their combs from four to eight or ten inches to remove this silken shroud, and have known them to cut and drag out their only remaining Queen before she was transformed to a perfect fly, which occasioned the entire loss of the whole colony.

Repeated experiments have demonstrated the fact, that placing bees on the ground, or high in the air, is no security against the moths. I have lost some of my best stocks by placing them on the ground, when those on the bench were not injured by them. I have made a groove in the bottom board, much wider than the thickness of the boards to the hive, and filled the same with loam. I then placed the hive on the same, in such a manner as to prevent any crack or vacancy for the worms; and yet in raising the hive four weeks afterwards, I found them apparently full grown all around the hive in the dirt. I have found them very plentiful in a tree ninety feet from the ground.

The best method, in common practice, to prevent the depredations of the moth, is, to suspend the bottom board so far below the lower edge of the hive as to give the bees free entrance and egress all around the same during the moth season, or to raise the common hive, by placing under it little blocks at each corner, which produces good effect. But I know of but one rule, which is an infallible one, to prevent their depredations, and that is this: keep the combs well guarded by bees. See Rule 10, and remarks on 12.

Large hives that never swarm, are never destroyed by the moth, unless they lose their Queen, melt down, or meet with some casuality, out of the ordinary course of managing them. They are not often in the least annoyed by them, unless there are bad joints, cracks, or shakes, so as to afford some lurking places for the worms. The reason for their prosperous condition is obvious. The stock of bees are so numerous that their combs are all kept well guarded during the moth season, so that no miller can enter and deposit her eggs.

Hives made so small as to swarm, are liable to reduce their colonies so small as to leave combs ungarded, especially when they swarm three or four times the same season. All swarms, after the first, sally forth to avoid the battle of the Queens; constantly making a greater draft, in proportion to the number left, until the combs are partly exposed, which gives the miller free access to the edges. The seeds of ravine and plunder are thus quickly sown, and soon vegetate, and fortify themselves by their silken fortress, before the bees are aware that their frontiers are invaded. While the moths are thus engaged in establising their posts on the frontiers of the bees, the latter are constantly and indefatigably engaged in providing themselves with another Queen, to supply the place of the old one, which has departed with a swarm, and raising young bees to replenish their reduced colony. Now as the moths have got possession of the ground on their frontiers, it requires a tremendous effort on the part of the bees to save their little colony from a complete overthrow.

If late, or second and third swarms are always returned immediately, according to the rule, the combs are kept so guarded the moths are compelled to keep their distance, or be stung to death before they can accomplish their purposes.

Hives made so large as not to swarm may lose their Queen, and then they will abandon their habitation and emigrate into the adjoining hive, leaving all their stores to their owner, which, unless immediately taken care of, the moths will not fail to destroy.

The moths are often complained of when they are not guilty. Hives are frequently abandoned by their occupants, in consequence of the loss of their Queen, unnoticed by any observer, and before anything is known of their fate, the hive is destitute of bees, and filled with moths.

In the summer of 1834, one of my neighbors had a very large hive that never swarmed, which lost their queen; and in the course of a few days the bees entirely vacated their tenement, and emigrated into an adjoining hive, leaving the whole of their stores, which amounted to 515 lbs. of honey in the comb. No young bees or moths were discovered in the hive. Instances of this kind frequently occur, and the true cause is unknown, from inattention.

The Queen is much more tenacious of life than any other bee, and may live much longer. It is believed that the common bees do not often live to exceed 18 months. The Queen is supposed to live several years. By clipping one wing of a Queen accompanying a second swarm, she has been known to come out with the first swarms for several successive years. But one Queen exists in the same hive any great length of time. When there are more than one, the peculiar sound of each, as explained in remarks on Rule 2, is heard by the other, which usually results in a battle between them, or the issue of a swarm in the course of a day or two, unless the swarming season is nearly at a close, then the common bees sometimes smother them as explained in remarks on Rule 2.

Bees, when placed in a dark room in the upper part of the house, or some out-house, are easily kept (not cultivated) a while, and may be of some benefit to their owner; but as they are liable to most of the casualties that swarming hives are, they cannot be as profitable. It takes several years before much comfort, other than the amusement of seeing them work, can be realized; besides if they chance to escape the moth, the combs are rendered exceeding dark coloured and filthy where the bees locate in the winter; and a disagreeable

smell, which is caused by their winter breath and other exhalations, is the result. In a few years the bees acquire habits of indolence, and as a natural consequence, soon manifest it by their irritability, unlike those Colonies which are industrious and in a healthy and prosperous condition.

Large colonies never increase their stock in proportion to the swarming colonies. There is but one female in a large colony, and they can do but little more in raising young bees than to keep their stock good by replenishing them as fast as they die off or are destroyed by the birds, reptiles and insects, which are great admirers of them, and sometimes swallow them by dozens. Now if it requires five swarming colonies to be equal in number to the one first described, is it not difficult to imagine that five times as many bees may be raised by the swarming colonies; for one Queen will probably lay as many eggs as another.

The swarming hives are no more liable to be destroyed by this moth, during the swarming season, than others, if the hives are kept well replenished with bees according to Rule 10.

RULE XI.

On Feeding Bees.

If it is found that a swarm need feeding, hitch on the feeder, well stored with good honey, while the weather is warm in October; or place comb filled with strained honey in the chamber of the hive, or on the bottom board, or both at the same time, without dripping,—and the bees will store the honey in the lower apartment of the hive, if done while the weather is warm

The apiarian should use the same precaution in feeding, as directed in Rule 4, to prevent robberies.

REMARKS.

The best time to feed is in the fall, before cold weather commences. All hives should be weighed and the weight marked on the hive before bees are hived in them. Then, by weighing a stock as soon as frost has killed the blossoms in the fall, the apiarian will be able to form a just estimate of their necessities. When bees are fed in the fall, they will carry up and deposit their food in such a manner as will be convenient for them in the winter.

If feeding is neglected until cold weather, the bees must be removed to a warm room, or dry cellar, and then they will carry up their food, generally no faster than they consume it.

A feeder should be made like a box with five sides closed, leaving a part of the sixth side open, to admit the bees from their common entrance with its floor level, when hitched on the front of the hive. It should be of sufficient depth to lay in broad comb, filled with honey. If strained honey without combs is used for feeding, a float, perforated with many holes, should be laid over the whole of the honey in the box, or feeder, so as to prevent any of the bees from drowning; and at the same time, this float should be so thin as to enable them to reach the honey. It should be made so small that it will settle down as fast as the honey is removed by the bees. There should be a tube inserted vertically through the float and made fast to it, extending upward through the top of the box in such a manner as to receive the honey from a tunnell and convey the same directly under that float. A light of glass should be placed in the back side, and a door to close and darken it at pleasure.

Great profits may be made in large apiaries by feeding cheap honey in the fall. The bees, being compelled to carry up and deposit the cheap honey in the Lower apartment of the hive, (and they will live on that as well as any other,) their owner can compel them to carry as much pure white clover honey into the drawers the following season, there being no room to store it below. Swarms will feed out and deposit ten pounds of honey a day and night, each hive. Small drawers cannot be depended on as feeders, except in the spring and summer unless they are kept so warm that the vapor of the bees will not freeze in them. It would be extremely hazardous for the bees to enter a frosty drawer. They will sooner starve than attempt the experiment. Drawers may be used without danger from robbers, but when the feeder is used, robbers must be guarded against as directed in Rule 4.

Bees should not be fed in the spring unless they are nearly destitute of honey, because they fill up the brood comb too much with honey; when fully fed in the fall, the bees store up the honey in such a manner as will be convenient for them in the winter, and notwithstanding the cells for raising young bees are filled up with honey at that time, the bees consume the honey and enter the breeding cells in the course of the winter, so that the Queen is not interrupted in depositing her eggs to raise young bees in the spring following.

A good swarm of bees in the Vermont Hive should weigh at least 25 pounds the 1st of december, in addition to the weight of the hive.

Care should be exercised, in fall-feeding, to supply them with good honey, otherwise the colony may be lost before Spring by disease. Poor honey may be given them in the spring, at the time when they can obtain and provide themselves with medicine, which they only best understand.

Sugar dissolved or molasses, may be used in the spring to some advantage but ought not to be substituted for honey, when it can be obtained.

RULE XII.

On Wintering Bees.

Turn over the drawers so as to prevent the entrance of the bees, or their breath, in September, or fore part of October. When cold weather commences, suspend the bottom board half an inch, and open the ventilator.

REMARKS.

The watery substance which is caused by the breath and other exhalations of the bees, and collects in the drawers in cold weather, should be kept out of them; because frost forms in them, and runs down through the apertures on the bees as often as it melts, and makes the bees damp and the combs mould; besides, this vapor penetrates and fills the timber (drawers and chamber) and causes a disagreeable smell the following season, and is the cause of introducing the little ants into the chamber.

There are three principal causes of death among bees in the winter, to wit: want of honey, (not bread never eat it except when in the larva state) want of air, and freezing.

Bees sometimes die of starvation, with plenty of honey in the hive at the same time. In cold weather they crowd together in a small compass in order to keep warm: and then their breath, and vapour collect in frost in all parts of the hive, except in the region they occupy. Now unless the weather moderates so as to thaw the ice, the bees will be compelled to remain where they are located until their stores are all consumed that are within their reach. One winter we had cold weather ninety-four days in succession, during which time the bees could not move from one part of the hive to another. I examined all my hives on the eighty-third day, and on the ninetieth day I found four swarms dead. I immediately examined the cause, which was as already stated. I then carried all my hives into a warm room and thawed them, so that the bees could move.

Too much swarming frequently occasions the loss of the old stock the winter following, because their companions are so reduced in number that the necessary animal heat cannot be kept up in the hive to prevent them from perishing by cold. All such stocks should be stored in a dry cellar or some warm room, where they can be kept comfortably during cold weather. It is believed that bees may be kept through the winter without losing them, if the apiarian is attentive to their wants. If destitute of honey, he will feed them. If suffering for want of air, (which is the most frequent cause of death,) he will ventilate them. If freezing, he will thaw them out, in short, if they are apparently dead, he will resuscitate and bring them to life and activity, which may be done in all cases (except when smothered) if attended to in season. In February 1833, I had a swarm that were starved by design. I resuscitated them three times without feeding in three successive days before life was extinct. The life of bees many times is in a state of suspension considerable time before their death, and may be resuscitated by human aid, when otherwise life would become extinct. I have resuscitated them repeatedly under various circumstances for myself and neighbours. Some of the best stocks I now own were once apparently dead. A screen bottom board should be used so as to let up the warm air into the hive, and at the same time enable the apiarian to control and keep the bees in the hive during the process of resuscitation. The feeder should be used in every case, to give the bees exercise, and restore activity.

A cellar made in the side of a dry hill so covered as to keep out water, is a good storage for wintering bees, There should be two ventilators at the two most extreme parts of the cellar—one near the bottom and on its side, to admit pure air, the other through the top or covering to let the bad air escape.

RULE XIII.

On Transferring Swarms.

This operation should never be effected by compulsion.

First Method.—Insert drawer No. 1 into the chamber of the hive to be transferred, as early as the first of May. If the bees fill the drawer, they will recede from the Lower apartment and winter in the drawer. As early in spring as the bees carry in bread plentifully on their legs, remove the drawer, which will contain the principal part of the bees to an empty hive. Now remove the old hive a few feet in front, and place the new one containing the drawer where the old one stood. Now turn the old hive bottom up. If there are any bees left in the old hive, they will soon return and take possession of their new habitation.

Second Method.—Take drawer No. 1, well filled by any hive the same season—insert the same into the Chamber of the hive to be transferred, in September, (August would be better.) If the bees need transferring, they will repair to the drawer and make the same their winter quarters. Then proceed in the spring as directed in the first method.

REMARKS.

This management should excite a deep interest in every cultivator, both in a temporal and moral point of view. Temporal, because the lives of all the bees are preserved;—moral, because we are accountable to God for all our acts. We are not to be justified in taking the lives of animals or insects, which are but lent blessings, unless some benefit to the owner can be derived from their death, which will outweigh the evils resulting from such a sacrifice. Duty compels me to protest in the strongest terms and feelings against the inhuman practice of taking the lives of the most industrious and comforting insects to the wants of the human family by fire and brimstone.

When bees have occupied one tenement for several years, the combs become thick and filthy, by being filled up with old bread and cocoons, made by young bees when transformed from a larva to the perfect fly. Bees always wind themselves in their cells, in a silken cocoon, or shroud to pass their torpid and defenceless [chrysalis] state, These cocoons are very thin, and are never removed by the bees. They are always cleaned immediately after the escape of the young bees, and others are raised in the same cells. Thus a number of bees are raised, which leaves an additional cocoon as often as the transformation of one succeeds that of another, which often occurs in the course of the season. Now in the course of a few years the cells become so contracted, in consequence of being thus filled up, that the bees come forth but mere dwarfs, and cease to swarm Combs are rendered useless by being filled up with old bread, which is never used except for feeding young bees. A greater quantity of this bread is stored up yearly than is used by them, and in a few years they have but little room to perform their ordinary labours. Hence the necessity of transferring them, or the inhuman sentence of death must be passed upon them, not by being hung by the neck until they are dead, but by being tortured to death by fire and brimstone.

It is obvious to every cultivator that old stocks should be transferred. I have repeatedly transferred them in the most approved manner, by means of an apparatus constructed for that purpose; but the operation always resulted in the loss of the colony afterwards, on a swarm which would have come from them.

When it is necessay to transfer a swarm from one Vermont Hive to another of the same kind, insert drawer No. 1 into their chamber in the spring, say the first of may. If they fill the drawer, let it remain there; if they need to be changed to a new hive, they will recede from the lower apartment and make the drawer their winter quarters, which should remain until warm wea-

ther has so far advanced as to afford them bread Then they may be removed to an empty hive, as directed in the rule. Now the drawer contains no bread, and should remain in the old stock until bees can provide themselves with a sufficient quantity of that article to feed their young bees with; for bread is not collected early enough and in sufficient quantities to feed their young as much as nature requires. If the bees fail in filling the drawer, one should be used that is filled by another swarm. Thus the aged and infirm stock is changed into the full vigor of youth by their own free act, without any compulsion of their owner.

If bees are transferred from the old box hive, or from any other to the Vermont Hive, except as described in the foregoing remarks, it should be done immediately before, or forthwith after the second swarm has left the hive. Then both old and young should be colonized together. If the operation is performed before first swarming, their owner will be sure to lose one swarm in the wanton destruction of eggs, larva and chrysalises, and if it is done after the first swarm leaves, before a Queen is heard, he will get the bees without a Queen, because the old Queen leaves the hive with the first swarm, and another is not usually hatched sooner than seven, eight, or nine days after first swarming and if transferring is delayed until the swarming season is through; the bees will not make a sufficient quantity of comb to cluster in; nor honey enough to sustain them through the following winter.

I would not be understood to approve of transferring from the old box until the combs are so old as to produce dwarfs

To be Continued.

EXPERIMENTS IN THE MANUFACTURE OF CORN STALK SUGAR, BY MARCUS ADAMS, ESQ., OGDEN, MONROE CO.

Our readers have been already informed, that a premium of $100 was awarded by the State Agricultural Society to Marcus Adams, of this county, for experiments in the manufacture of sugar from corn stalks. This subject is of so much general interest, that we copy from the recent vol. of Transactions, with slight abridgement, Mr. Adams full report of his experiments, with the important suggestions and inferences deduced therefrom:—

Raising the Corn.—One acre of ground was selected of a sandy loam, cultivated last year to ruta-baga; this was manured with thirty loads of the best stable manure, well mixed in the soil by ploughing and harrowing Corn planted the 13th of May, with eight-rowed northern corn; the rows three feet apart one way, and hills eighteen inches the other, with from six to eight kernals in a hill. Corn came up fine and was plastered the 31st May; hoed the first time the 9th and 10th of June, the second time 24th June. Cultivator run through it three times. The corn began to tassel the 18th of July, and was in full tassel the first of August.

Up to this time the crop had looked uncommonly well, but from the 1st of August a severe drought commenced, and continued until the crop was very materially injured. Some spots where the corn had grown more luxuriantly, withered and dried up; other parts of the field suffered less, so that on the whole there was some more than half of a good crop, or what there would have been if the season had continued favorable.

Cutting, Grinding and Boiling.—Cut the first stalks, and made the first experiment at grinding and boiling, the 25th of August. The stalks at this time were quite green, but the produce was quite satisfactory, and appeared quite favorable for crystalizing. The juice was very abundant, of a greenish color, very rich, thick and heavy, yet retaining all the flavor of the corn stalk, until after cleansing and boiling.

August 30th, made the second batch. This was boiled in a shallow sheet-iron pan, clarified and strained according to the directions given in Mr. Ellsworth's report. From this batch was taken the specimen of sugar exhibited to the Committee at the State Fair in Rochester.

Other experiments were made the 4th and 7th of September.

The object of these successive experiments was mainly to determine at what time the saccharine matter was sufficiently matured to make crystallized sugar.

On the 11th September the stalks appeared in the right stage, and cutting, grinding and boiling were commenced, and continued with little intermission until the whole was completed. The method pursued in this operation, was to keep a sufficient number of hands in the field to strip the leaves or blades, and cut off the tops as fast as the stocks were wanted for use, this labour was generally performed by boys. The cornfield being at a little distance from the mill, the horse used for grinding was put before a light wagon, driven to the field, the stalks were then cut and placed upon the wagon, (taking care to keep them straight and in order,) driven to the mill and ground without delay. A load of this kind in a light wagon, with lumber box, will make a batch of from fifteen to twenty gallons; this would be ground in about thirty minutes. Lime water was mixed with the juice while it was running from the mill The juice is then strained through a flannel cloth into a pan, and heated, rather moderately, to the boiling point, when the scum is removed with a skimmer, then boiled rapidly for a few minutes. The syrup is then removed from the fire, and again passed through the flannel strainer, when the boiling is finished as rapidly as possible.

This process from the cutting of the stalk to taking the sugar from the fire, could not possibly be performed in less than two hours, and if the batch was larger, would often exceed three. Five batches were made in one day, from which one hundred pounds of sugar were produced.

The Boiler—The boiler or pan, I made of a sheet of Russian Iron, turned up at the sides and ends, lapped and rivetted at the corners, would hold about twenty-five gallons, five and a half inches deep, but from fifteen to twenty gallons is as much as would boil to advantage. This pan is placed upon an arch of brick, so that the fire comes in contact with only the bottom.

Mill.—To construct this was a matter of much more difficulty. Some drawings and descriptions are given by Mr. Ellsworth, but little more could be known from them than that there must be three rollers, so placed and put in motion that the stalks in passing between them should receive two crushings.

To plan and construct a mill with the proper dimensions and with the trength required, so that the work of crushing the stalks should be performed with certainty and despatch, was no easy task. I flatter myself that I have in this been tolerably successful. The rollers and iron work, patterns, &c., for my mill, were made by A. J. Langworthy, of Rochester, at a cost of sixty-five dollars. The whole weight of iron is about nine hundred pounds.

About one half of the mill is in the horse-power. The iron rollers being placed horizontal, it was necessary to have a horse-power wheel and gearing in order to give them motion. If the more simple, and it would seem at first view, less expensive forms, given in Mr. Ellsworth's report had been adopted, placing the rollers perpendicular, the horse passing around them, the rollers must have been of large diameter in order to take through the length of a corn stalk at one revolution of the horse. These large rollers, when made of iron, would have been very expensive, and probably not work as fast as the small ones I use, giving them a quicker motion by gearing. In my mill the circumference of the rollers has such a proportion to their motion that their velocity is equal to about one sixth the velocity of the horse; or, in other words, a corn-stalk six feet long, will pass through between the rollers in the same time that the horse will walk thirty-six feet. The grinding is a beautiful operation, the amount of juice contained in the stalk is surprising to every one. The stalks in passing through the mill are crushed very fine, and the juice entirely separated from them by the pressure of the rollers.

Clarifying.—This has been to me a difficult and to some extent an unsuccessful operation. All the various methods recommended by different persons who have made some experiments on cornstalk sugar, and all that, my own experience in clarifying maple sugar could suggest, failed of producing fully the desired effect. In all the failures which have been experienced to produce crystalized sugar, the cause should be sought here. Unless the juice of cornstalks can be clarified, it is vain to expect a pure article of crystalized sugar. All the obstacles to the complete success of this enterprize are met at this point; but that they will be completely overcome, there cannot be the least doubt. Lime water applied to the juice as soon as it comes from the mill, one gill to fifteen gallons, was thought to produce the best effect. But experiments were made with various other things, such as milk, eggs, charcoal, &c.; these were used separately but nothing appeared to raise the scum as well and render the juice as clear and well flavored as the lime water. One experiment was made by filtering the juice through sand and charcoal, this rendered it very transparent and improved the taste, but there are very many objections to this process—the length of time required for the operation is a sufficient one.

Straining.—This operation is performed both before and after clarifying. The strainer used was a square yard of good new flannel, of fine texture; so great is the amount of mucilage, or very minute particles of the cornstalk contained in the juice, that the strainer has to be rinsed in water once or twice in straining a batch. The second time straining is rendered more difficult by the juice being hot, as the hands have to be used in forcing it through the cloth. As knowledge and experience is gained on the subject of clarifying, the straining will be dispensed with, except to pass the juice through a coarse strainer to remove some of the larger impurities. Some method will be discovered by which all this foreign matter will be removed in the operation of skimming.

Boiling.—This operation requires care and close attention, particularly when about ready to skim, and when the juice is concentrated to about the point desired. The more rapidly this operation is performed, the more perfect will be the crystalization. But, however necessary it may be, it is scarcely possible, with any apparatus that I have any knowledge of, to perform the whole labour of cutting, grinding, straining, skimming, and boiling, in the short space of one hour, as recommended by Professor Mapes, of New York. If this is ever done, it must be in very small quantities, or some very improved method must be adopted.

In boiling as soon as the scum begins to rise, the fire must be regulated with care, that time may be had for removing the scum before it shall be boiled in. If the operation of boiling and skimming be well performed, about one gallon of thick heavy scum will be obtained from a batch of fifteen gallons. The syrup, when it becomes thick and nearly done, has a very beautiful appearance, in every respect equalling the best of maple syrup. To boil to the crystalizing point, (which is a very uncertain one,) requires considerable care and discrimination. The same tests that are used for maple syrup are equally applicable to cornstalk, as for instance, when it will flake off, breaking short, from a dipper or stick—or string out between the thumb and finger, from half an inch to an inch in length, is per-

haps the safest test. Very great care is necessary here, that it be brought to the right point and no more: and also in managing the fire, as a little blaze, or too strong a heat is most sure to scorch, and this is fatal to crystallization.

Crystallization.—Difficulty has been found here by all that have made experiments with cornstalk sugar, but perhaps every one has obtained a sufficient quantity that was well grained to satisfy them, that the difficulty was somewhere in the process of manufacture.

From recent observation I am inclined to think that I have kept my sugar in too cold a place. Two small parcels, left partly by accident where they received the warmth of a fire, were found well grained. But there is another difficulty after it is well crystalized, to make the molasses separate, or drain, as it is called: although the crystal appears to be as fine as was ever formed, still the molasses will not separate by any common methods used for maple sugar. As yet I have not been able to procure any better specimen than that exhibited at the State Fair.

—

Amount from the Acre.

Although the quantity of stalks was so much diminished by the drought, yet six hundred pounds were obtained; this it should be understood, is weighed when taken from the fire and before graining has commenced. If it were all well grained and the molasses separated, the weight of sugar would probably not be more than five hundred, and molasses one hundred.

In order more fully to determine the amount that might be produced from an acre of good corn, I measured two square rods of the best corn I had: the stalks were then cut, and their weight was 195 pounds; after grinding, the juice weighed sixty-nine pounds and measured nine gallons; from this I obtained twelve and a half pounds of sugar. By this it would appear, that had the whole acre been as good as the two rods submitted to the test, one thousand pounds would have been the produce. And it would seem that this must be a safe calculation as the stocks on the two rods were not as large as would be grown in a good season.

An equal amount by weight of large stalks of rank growth, and small ones that were grown thick, were ground separately, but as no material difference was found in the produce, my opinion is that the corn should be cultivated so thick that no ears will be produced.

—

[Here follows a list of items, which we omit, showing the expense of raising one acre of corn stalks, including rent of land, to be $19 52.]

—

There is no part of the business that is so tedious as plucking the ears, stripping the leaves and cutting off the tassel. A part of this labor was performed for the fodder that might be obtained from it, but it was not sufficient to pay; as the labor of plucking the ears was performed for this consideration, I am unable to say what it would cost; but this much is certain, it is needless for the most part, as no ears of any amount need be raised, if the corn is sufficiently thick. From the best estimate that I can make of the expense of stripping leaves and cutting the tassel, I think that a smart hand would perform the work on an acre in six days, or for $4 50; making the whole expense up to the cutting of the stalk $24 02.

It is somewhat difficult to come at the expense I was at in manufacturing the acre of stalks into sugar, so much was done by way of experiment. But as one hundred pounds were made one day, I shall take that as my guide, and call it a day's work for two hands to make one hundred weight.

The amount above brought down.....	$24 02
To twelve days work making sugar, at 6s. per diem.	9 00
To use of horse and wagon 6 days at 3s per diem.....	2 25
To ¾ cord of wood at 12s. per cord....	1 12
The whole expense of cultivating the crop, and manufacturing the 600 pounds sugar.....	$36 40

Or a fraction more than six cents per pound

Some credit may be given for fodder, as a large amount of leaves or blades might be saved with a little extra labor while stripping them. The stalks, after being ground, are worth some, thing, horses and cattle eat them very greedily when they are fresh from the mill.

—

Remarks and Suggestions by way of Recapitulation.

1. If good crystalized sugar of pleasant flavor shall be produced from the cornstalk, I see no good reason why its manufacture shall not become as universal as the raising of corn. Every neighborhood can as easily be supplied with its apparatus to make sugar as to make cider.

2. Corn should be grown so thick as to produce no ears. Some variety of corn that grows very large, like the "Ohio" or "Rocky Mountain" might be best; this latter is well adopted in some respects, as it is very little inclined to ears or leaves; cutting the tassel will not prevent earing, unless they are all cut and kept cut. The cutting of the stalk may commence as soon as the tassel is ripe. If the weather is warm, but if cool, or early in the morning, a little delay is not thought to be injurious.

3. Lime water is perhaps the best for clarifying of any thing yet discovered; but some agent that will more effectually cleanse from all deleterious or foreign matter, is necessary. Science, with persevering experiment will no doubt produce this result.

4. The less time occupied in boiling, the more perfect is crystalization. This is true of the maple juice, and probably more so of the cornstalk. To boil to advantage, two pans should be provided.

5. Any man of ordinary ingenuity, can make a pan in two hours, with no tools but cold chisel, punch, hammer, and six cents worth of rivets.

6. I make no doubt that a mill with wooden rollers would answer a good purpose for a small operation, and small operations are what are wanted; let no man go into this business largely until there is more knowledge on the subject. A simple mill with two rollers, that might be built for five dollars, would crush the stalk and save most of the juice. No cog-wheels can be necessary; for if you turn one the other must go. When experience has taught how to clarify, so that we may be sure of a good article, then will be the time for more perfect and expensive machinery.

7. If the result of this enterprise depended on the amount of saccharine matter contained in the cornstalk, its success would be certain. Estimates that have been made of the amount that might be made from an acre, have probably never been too high. Improvements in cultivation, and in finding the variety of corn best adapted, will no doubt greatly exceed these estimates.

8. The expense, as compared with maple, must be much in favor of cornstalk. Of the expense of growing an acre of cornstalks, every farmer may judge correctly; then compare the amount of fuel, the amount produced in a day, the expense of fixtures, and it is all vastly in favor of the corn stalk. Only let the cornstalk sugar have the delicious flavor and the beautiful crystallization of the improved maple, and no longer will that pride of the forest be hacked and bored "with wicked hands," to obtain its sap.

May we not hope that Mr. Ellsworth's forthcoming report will throw much light on the subject? The collected experience of all that have been engaged in the business the past season, will soon be laid before Congress and the people. If Professor J. I. Mapes, shall fulfil his pledge made in the last report, some scientific and practical information will no doubt be the result.

[We shall give some extracts from Mr. Ellsworth's Report in our next.]

With these remarks I submit this report. I have endeavoured to give a faithful and full account of my experiment. I am aware, that on some parts of this business, I cannot speak as favorably as might be desired; but for myself, I have no fear of the result of the enterprise. I would beg leave to suggest, that a liberal premium be offered next year, for a given amount of cornstalk sugar of the best quality. This might stimulate, not only a greater amount, but more careful experiment.

TO PRESERVE TOMATOES.

Messrs. Editors,—As I am very fond of tomatoes, and have a way of preserving them to use, when the season for them is over, a way which I have never seen proposed, although others may have heard of it, I have concluded to send it to you, that you may publish it if you think proper:—

Dip the ripe tomatoes in scalding water, peel them, and divide them into two, or if very thick through, three slices, lay them on plates and put them into the oven after the bread is drawn; if a good oven, by the time it is cool, or in 48 hours, they will be perfectly dried; put them into paper bags and keep in a dry place; when wanted for use, dip them into cold water and lay them on a dish to swell, and in a mince or stew, they are almost equal to the fresh fruit. If you wish to make tomato sauce, add a little water to cook them in. They are very good to eat out of hand in the dry state.

A Female Reader.

Brooklyn, May 6, 1844.

PRESERVING EGGS.

I have just read the mode of preserving eggs in the last number of the Cultivator, and a lady at my elbow, for whom I have the highest esteem, informs me that she preserves them as follows, and has never taken up a bad egg, after keeping them all winter:—

Put a layer of salt in the bottom of a jar, and stick the eggs into the salt, *point downwards*, till a layer of eggs is made, when more salt is put in, and again a layer of eggs, and so on successively till the jar is full. Having often eaten of the eggs, I know the mode to be a good one. T.

WEAK EYES.

Wash the eyes frequently in cold water if they are in the least inclined to weakness.

Make a wash by pouring water over a jar full of rose leaves; let it stand all night, and then strain the water. It will be found excellent for the eyes, and should be used frequently.

A poultice made of rose leaves is good for a stye upon the eye-lids.

If the eyes are very weak, boil a handful of freshly gathered salad in a pint of water, strain it, and apply the liquor to the eyes at intervals. It will be found very soothing. A poultice of boiled salad leaves will also relieve severe pain in the eyes.—*Selected.*

Cure for the Stretches.—Sheep sometimes stretch their noses out on the ground and around by their side, as if in severe pain. This is frequently occasioned by an involution of a part of the intestine within another, called, when occuring in the human subject, *intersusceptio.* Immediate relief is afforded, when this last is the case, by lifting the animal by the hind legs, and shaking a few times, when the pain disappears.—*American Agriculturist.*

REPORT OF THE COMMISSIONERS OF PATENTS.

We are under high obligations to the Hon. H. L. Elsworth, Commissioner of Patents, Washington, United States, for his admirable Report for 1843, containing 340 pages of closely-printed matter. The Report in question contains a vast amount of Agricultural Information, of the most valuable character. For the benefit of our readers, we copy the following practical remarks upon the productions of the Dairy :—

The productions of the Dairy are of great value, and may become still more so as their exportation is extened. Science has been directed to the annalysis of milk, and principles having an important bearing on the success of this pursuit have been developed. Thus Dr. Playfair says, respecting a series of experiments, that the milk of the evening contained 3.7 per cent. of butter, and, of the following morning 5.6 per cent. The deficiency in the first observation is referred to a greater consumption of butter, or its constituents, from respiratory oxidation during the day, when the animal was in the field, than during the night when it was at rest in the stall. When confined during the day and fed with after grass in a shed, the proportion of butter rose to 5.1 per cent. When fed with hay, the butter was 3 9 and 4.6 per cent ; when fed with portions of potatoes, hay and bran flour, the butter was 6.7 and 4.9 per cent. ; when with hay and potatoes, 4.6 and 4 9 per cent.

From the accont of the experiments of Professor Trail, contained in the Transactions of the Highland Agricultural Society, are derived the following results :—

1. That the addition of some cold water facilitates the process, or the separation of butter, especially when the cream is thick and the weather hot.
2. That cream alone is more easily churned than a mixture of cream and milk.
3. That butter produced from sweet cream has the finest flavor when fresh, and appears to keep longest without acquiring rancidity, but the buttermilk so obtained is poor, and small in quantity.
4. That the scalding of the cream, according to the Devonshire method, yields the largest quantity of butter, which, if intended for immediate use is agreeable to the palate and readily saleable ; but if intended to be salted, is most liable to acquire, by keeping, a rancid flavor. The process of scalding is troublesome, and the milk after the removal of the cream is poor, and often would be unsaleable, from the taste it has acquired from the heating.
5. That churning the milk and cream together, after they have become slightly acid, seems to be the most economical process, on the whole, because it yields a large quantity of excellent butter, and the buttermilk of good quality.
6. That the keeping of butter in a sound state appears to depend on being obtained as free from uncombined albumen or casein and water as it can be, by means of washing and *working* the butter when taken from the Churn.

That our country possesses some fine milch cows, cannot be doubted by any one who will take the pains to run over the agricultural journals of the past year. A few specimens of these may be added :—In Massachusetts we notice the mention of one cow which fed on pasturage, and having also two or three quarts of meal per day, on being milked three times in the day yielded milk sufficient for 18 lbs. of butter in a week ; also, another which gave 16 lbs. of butter in a week, besides supplying a family of four persons with milk ; another also is mentioned, which gave 253 lbs yielding 12 lbs. 6 oz. of butter. A cow in Wheeling, Virginia, is likewise mentioned as having yielded for 16 days, in May and June, on being milked three times per day, 31½ quarts of milk for two weeks ; the butter made amounted to 14½ lbs per week. Another, still, is mentioned in the State of New York, which, in 21 days, gave 65½ lbs. of butter, or at the rate of 1 lb. for 5 quarts of milk. The average of 65 remarkable cows, mentioned by Mr. Colman in his report, is 10 quarts for a pound of butter ; and several cows which have been formerly noticed as distinguished for the richness of their milk, in one case, gave milk which only yield 1 lb. of butter for 18 quarts ; and in another, 1 lb. for 10 quarts.

In the appendix No. 18, will be found a new method of obtaining cream from milk, by a process said to be well known in Devonshire, England, in which vessels formed of zinc plates are used ; and the effect in the production of butter is stated to be 40 oz. to 4 gallons of milk —being an increase of cream 12½ per cent., and of butter upwards of 11 per cent.

Much is said to depend on the proper beating or working of butter, by which it may be deprived of its buttermilk ; rubbing with the ladle is not sufficient. In an English publication of high authority, it is said that "the great point in making good butter, and that which will keep, is the freeing it from buttermilk ; and, if everything else is well done, if this point is overlooked, good butter is impossible for any length of time. The mixture of milk in any degree with the butter is sure to produce frowyness, or some unpleasent taste to the butter ; and the entire freedom from this constitutes the grand secret of making good butter. There are many who think washing butter compatible with retaining the rich flavor ; but if the water is cold and pure it is scarcely possible anything should be washed away, the buttermilk (which destroys the flavor of all butter) excepted. Besides, the best butter in the world, and that which in all markets commands the best price, (viz. Dutch butter,) is invariably made in this way ; and when the example has been followed by others, it has rarely failed of success. Perfectly free from the substance that causes it to assume the putrid frowy taste of bad butter, it may be kept with almost as much ease as tallow ; solidity in packing, clean sweet vessels, and a low temperature, will ensure its keeping for any reasonable time. Let no one expect good butter, however, so long as coarse impure salt is used, or a particle of the buttermilk is remaining in it."

The allusion above made to the Dutch butter, may be appropriately followed with some account of the mode of butter making in Holland, which is found in one of the ablest of our agricultural journals. It is said that, in 1830, England imported no less then 116,233 cwt. of Dutch butter, and 167,317 cwt. of Dutch cheese. In 1835, 106,776 cwt. of butter came from Holland. It is a singular fact, that the English consume more cheese than butter : thus, the consumption of cheese, in London alone, is stated to be 33,000,000 lbs., while that of butter is but 19,000,000 lbs. In France, the opposite proportion prevails. The pastures of Holland, it is said, " lie low and flat ; and as the water in the canals is always near the top, the soil must be moist." The ground, instead of being ploughed up, " is kept in good condition by top dressings, consisting chiefly of the solid, and especially liquid manures collected in the cow-houses, mixed with the scrapings of the small canals." The first year after such dressing, the land is generally mown for hay. The Hollanders, likewise, "are careful in the selection of their cows, they are generally fattened and turned off to the butcher at eight years old, and the bulls at four or five. The cows are turned to pasture in March or April, and are at first covered with a very thick cloth of tow covering the upper half of the body, from the shoulders to the tail, to prevent disease from the cold. They are pastured about thirty weeks. Hay is the common food in winter, though rape cake and brewers' grains are sometimes added. The *byers*, or cow-houses, are generally lofty, airy, paved with large square bricks, and kept perfectly clean. The roof is about 10 feet high. There are no rack or mangers, but the food is placed in gutters, always clean near their heads. Gutters in the rear serve to carry off the urine and dung, and these gutters are also kept clean. The cows are always milked by men, and the butter and cheese made by women. Ninety cows are managed by nine men and two women. Two women are considered enough for any dairy."

Three kinds of butter are made ; *grass* butter, when the cows are at grass; *whey* butter, from the whey of sweet milk cheese ; and *hay* butter, made in winter. The method of making grass butter is thus described :—

"The cows being thoroughly milked, the pitchers of milk are put into coolers. When the cream has gathered and soured, if there is enough, they churn every 24 hours, and the churn being half filled with sour cream. A little hot or boiling water is added in winter, to give the whole the required heat : and, in very warm weather, the milk is first cooled in the coolers. In small dairies, the milk is sometimes churned, when soured, with ut separating the cream. The butter, immediately after being taken out of the churn, is put into a shallow tub, and carefully washed with pure cold water. It is then worked with a slight sprinkling of fine salt whether for immediate use or the barrel. When the cows have been three weeks at grass, the butter is delicious, and is made in fanciful shapes of lambs stuck with flowers of the polyanthus, and sells as high as 70 or 80 cents the 17¼ ounces, or Dutch pound. If intended for barreling, the butter is worked up twice or thrice a day with soft fine salt for 3 days in a flat tub ; there being about 2 pounds of this salt allowed for 14 pounds of butter. The butter is then hard packed by thin layers into casks, which casks are previously seasoned and cleaned. They are always of oak, well smoothed inside. Before being used they are allowed to stand three or four days filled with some whey, thereafter carefully washed out and dried. Each cow, after being some time at grass, yielded about one Dutch pound of butter per day."

Two points in this process are most important :—

" 1st. No salt is used but what is incorporated with and disolved in the butter, which is necessary to give it flavor ; 2nd. The butter intended for keeping is worked from six to ten times, to incorporate the salt and to separate from it every particle of liquid, which, if left in it, would induce rancidity."

The *hay* butter undergoes a like process.

The *whey* butter is made by allowing the whey to stand three days or a week "after being separated from the curd, when the cream is skimmed off or the whey itself put into the churn, and the butter is formed in about an hour. By this process, in winter one pound of butter is obtained from each cow in a week : or, in summer, one pound and a half," The relative prices are said to be for grass butter 17 cents, for hay butter 13 cents, and for whey butter 12 cents per pound.

The Goshen butter in the State of New York, is celebrated all over the country, and the following account is given of one of the most celebrated of dairies there :—

The cows are "regularly salted and kept in good pasture during the summer ; in the winter, each cow is kept in a stall with a separate door to it, in a building two sides of a square round a large yard ; the upper story of the building is appropriated for fodder and hay. The cows are brought up to the yard, night and morning, and regularly milked. The outer paling of the yard is 50 feet from the house : here opposite the farm house, is placed a tunnel, into which the milk is poured as fast as a pailful is obtained from the cows. A short perpendicular tin pipe connects the tunnel with a horizontal one which is buried 2 feet under ground, out of the way of the frost, and leads into the cellar of the house. When the milking is going on, a woman stands in the cellar with supply-pans placed under the end of this horizontal tube, which, as fast as filled, she sets away on the cellar bottom. Here the milk stands till loppered and soured, as it is said to make more butter in this state than any other, of a better quality. In this state it is poured, cream and all, into churns which hold a barrel each. If the weather be cool, and

the milk not sufficiently warm to come readily, a can is filed with hot water, and this is placed in the milk in the churn, and stirred about till it reaches a temperature of 55 to 60 degrees." Water-power is preferred for churning to any other, as it is more regular. "When the butter has come, the power is stopped, and a pump rigged into the churn; the handle of which is attached to the power, and the buttermilk pumped into a reservoir just outside of the cellar, standing on a level with the ground: from this the buttermilk is conducted by a tin pipe of about 100 feet to another reservoir close by the piggery, from which it is dipped out in buckets, and fed to the pigs. After being churned, the butter is thoroughly washed off with cold water; if this be not done, it is difficult to get the buttermilk clean out of it. As soon as cool and solid, the butter is taken on a marble or smooth stone table, properly salted with clean fine salt, and worked over thoroughly with a wooden ladle or spatula—the hand never allowed to touch the butter, as, from its heat, it softens it." After being thoroughly worked, the butter is packed in firkins of seasoned white oak. The firkin, previous to packing, is well washed with cold water, and then rubbed all round with salt, to prevent the butter from adhering to its sides. It is put down in layers as churned, 3 or 4 inches deep.

When the firkin is filled, a linen cloth is placed over the butter; on this, half an inch of salt; to which is added a little water, to form a brine. The cellar is considered very important; it should be seven feet deep—eighteen inches of which, at the top, should be allowed for ventilation: the windows to be covered with very fine wire gauze, to let in the air and keep out the insects; the walls to be of stone and pointed, the floor of slabs.

The best temperature at which butter may be procured from cream, as appears by the experiments of Dr. Barclay and Mr. Allen, is in commencing churning from fifty to fifty-five degrees, and at no time ought it to exceed sixty-five degrees; while if it falls below fifty degrees, it will be more difficult and labourous to obtain the butter. It was found by Mr. Ballantyne that the greatest quantity of butter is obtained at sixty, and the best quality at fifty five degrees in the churn, just before it came. A mode of working butter is said to be practised in some parts of France, which makes it exceedingly compact and hard. A trough is prepared of requisite width. Into it is placed a wheel, which comes within the sixteenth of an inch of the bottom, and turning on a crank. The space in the trough is filled. At one end, which is left open, the butter and brine are pressed in; the other end, being nearly closed, the wheel made to revolve, and the butter comes out at the other, thoroughly salted, and free from buttermilk, in plates of the sixteenth of an inch in thickness. Great importance is attached to the kind of salt used in preparing butter for the market. Some of the kinds of salt have an injurous influence on the butter, to prevent its keeping.

It has been discovered that most kinds of wood contain considerable quantities of pyroligneous acid, which decomposes salt in butter kept in such tubs. The lined, or bass wood, is the only one which, as appears by careful experiment, is free from it; others, it is stated, may be freed from it, and thus rendered suitable, by boiling three or four hours, well pressed under water. Much importance has always been attached to the preparing of butter, so that it will keep on board of ships at sea and in warm climates. A simple process is now practised, which is said to be effectual for this purpose; which is, to have good butter well churned, and worked and packed hard and tight in kegs of seasoned white oak; the head is then put in, leaving a small hole into which brine is poured to fill up the vacant space; and of so much importance is it deemed, to prevent any bad taste, that the pluge for the hole must not be made of cedar or pine, but of cypress or bass wood, as otherwise it would be injured. After which, these kegs are placed in a hogshead well filled with brine of full solution, that will bear an egg, which is then headed up tight and close. The importance of this subject may be estimated from the fact that, as it appears, the standing contracts for butter, in our navy, that will keep at sea, at twenty-six cents per pound, and for cheese twenty cents per pound. It is now put up of good dairies in Orange county, and keeps perfectly. An account of a mode of preparing butter for shipping, by a merchant in one of the cities of New England, corroborating the above, may be found in appendix No. 19.

In the making of the best butter, rich pastures are considered very desirable. A suficient diversity of grasses mixed together, is useful, but there are some weeds which do great injury to the milk. The species of ranunculus known by the name of the *Buttercup* is said to have effected great injury to the butter in parts of England. An epidemic has also prevailed among cattle in England, which has been traced to the same cause. It it said to be now spreading through this country. The plant is described as being of an acrid poisonous nature, and, by various experiments, it has been proved to be very fatal to animals; cattle will generally avoid it, but they sometimes do not. Those which are confined to limited pastures, are more exposed to it; while those which have a wider range, and can make their choice of plants, suffer less. Greater care should be taken to eradicate it from the fields; and by the use of lime among the materials of compost, and frequent turning over the seeds, which are sometimes thus carried forth into the fields with the manure, it should be destroyed. Ploughing up also of the land may be necessary; but, at all events, the buttercup, if possible, should be rooted out. Other weeds, too, of a similar nature, and likely to injure the milk of cows, should be taken from the pasture on which they feed; the effecting this object will be more then repaid by the benefit derived from the purer milk and more excellent butter which will be obtained.

The bone-dust manure used on certain pastures in England, in which the soil is not adapted to this kind of manure, is said to have caused the cheese to deteriorate.

Mr. G. Davis, of New York, to whose enterprise in visiting the cheese-making districts of Holland much is due, and who supplies the United States navy with cheese which will keep on ship board and in warm climates, by which thousands of dollars are saved to the country, describes the cheese thus made under the inspection of a first-rate cheese-maker from Holland, as globular, weight about four pounds each. The curd is worked by hand until it is put into other moulds, and salted—that is a small quantity is put upon the end of the cheese, and changed every fifteen days; then it goes through a process of salting in warm salt whey for forty-eight hours and is then taken out and wiped dry with a cloth: then put into other moulds for six weeks to dry and cure; after it becomes quite day and hard, it is put on shelves to cure, so that it may be cased up. The loss in drying out is very great, as the Government receives them half yearly in each year. The expence of making is said to be much greater than of the common kind of cheese, and the loss in drying it four times as much; but the certainty of their keeping has been fairly tested, and they are stated to keep equal to the best Holland cheese. Of the flat kind formerly used in the navy, more than one-half, it is said, proved to be unfit for use, and was thrown overboard.

The Dutch are said to be remarkably particular as to the quantity and quality of the salt they use; and this is thought the principal cause of the sweet and delicious flavor of their butter, which, though well flavored, hardly tastes of the salt, or at all acrid. The average quantity of milk from Holstein cows in Europe is about two thousand five hundred quarts per annum; and it is calculated that every hundred pounds of milk will give three and a quarter lbs. of butter and six pounds of fresh cheese, fourteen pounds of buttermilk and seventy-six and three quarter pounds of whey, where cheese is made Fifteen quarts of milk is, then, considered a fair average for a pound of butter, though sometimes the milk is so rich that twelve quarts make a pound. On the whole, it is thought that one hundred pounds of butter, and one hundred and fifty pounds of cheese per annum, to each cow, is a fair product.

A great yield of butter and cheese is mentioned in a late agricultural journal as having been obtained in Oneida county. From twenty cows (commencing 15th of April, and ending the 1st of December) were made ten thousand pounds of cheese and one thousand pounds of butter—being an average of five hundred pounds of cheese and fifty pounds of butter from each cow. They were fed on whey from the dairy and two quarts of oatmeal per day.

PRESERVATION OF CORN FROM FROST.

Mrs. S. N. Hawes, of Shoreham, Vt., relates a remarkable case of the exemption of a piece of corn from frost, which he thinks is to be attributed to the plentiful use of long barn-yard manure, in connexion with the stalks of a crop of corn which had grown on the ground the year before—the whole having been plowed into the soil. He says;—

"I plowed deep, strewing the old crop of stalks in the furrows and covering the whole entire. I had a rank and extra growth of a large kind, which required a longer time to mature; and some of the last days of August or first of September, the earliest ears had commenced hardening, when we had one of the severest frosts I ever witnessed at that season of the year. I had much anxiety respecting my corn crop, which I visited early in the morning; but the crackling of the frozen grass at every footstep, prepared my mind to behold it in ruins. Yet determined to know the worst, I pressed on, mounted the fence, which surrounded it, and to my surprise, not a particle of frost was visible upon it! I looked around upon every side; all bore a wintry aspect. I looked around again upon the crop before me; it bore the appearance of having been wet by a gentle but profuse shower. I sprang over the fence, determined to pass through it; but ere I had reached half a dozen rods was glad to retreat, and before I could effect it, was completely drenched I again remounted the fence where I could take a view of every side; it was alike surrounded by a heavy frost."

"As I stood pondering upon the apparent phenomenon, the fact flashed upon my mind, that the process of decomposition from the extra quantity of long manure, particularly the old crop of stalks, was still going on to that degree that the heat completely counteracted the action of the frost. Near the middle of the day (which was extremely warm and clear,) I travelled a mile in length, visiting every field on the same level with my own, and all, without distinction, were entirely destroyed. Mine remained uninjured, and yielded an abundant crop of remarkable sound, ripe corn."—*Albany Cultivator.*

FARMING CAPITAL.

From a communication by Mr. L. Durand, we make the following extracts:—

"I think it correct to say, that a liberal expenditure of capital in farming, will ultimately pay better than when laid out in any other business: The difference between capital laid out in farming, and that laid out in manufacturing, is, that all which is expended in the latter beyond the actual profits of the goods manufactured, is a dead loss, while that which is laid out on the farm, under good management, causes it to improve and increase in value from year to year. In manufacturing, the interest on the capital may be received within six months or a year. In farming, it may not be so, but it will be sure to give its return in a series of years. Another item which has been much neglected by farmers, is that of purchasing *good implements* to carry on their farming operations. In this country, where labor is high, a farmer should obtain as many labor-saving implements as can be used to advantage. Although these implements may cost more at first than common ones do, they will find their account in it at last. Get the best implements to be had, even if you have to go out of the State for them, and you will thus be able to perform more work in a better manner, besides saving much labor, and preventing a great deal of *fretting* and ill temper. Try it and see."

ON ASCERTAINING THE WEIGHT OF CATTLE BY MEASUREMENT.

The importance of proceeding on correct principles in the rearing and feeding of live-stock, is now so generally admitted, as to require no illustration. With the feeder it is especially important that a disposition to arrive at early maturity should be encouraged and secured, so far as the acceleration of this desirable property is within his reach. In this respect much has been done of late, but much still remains to be done. Early maturity is not attainable without high feeding uninterruptedly, from the birth of the animals until they have attained to maturity, and this can only be attained where a superior system of cultivation is practised, as it is there only that a proper supply of food is available at every period of the season. In fertile districts the aid of cultivation is not necessary to produce the required supply during the summer season, as this is obtained from the pastures, but even in these cases it is by no means rare to find stunted animals, resulting from the winter treatment. The finest cattle are not by any means universally found in the most fertile districts, especially when early maturity—one of the best tests of excellence—is taken into account; so that improved cultivation is not only followed by superior crops, but also by a superior description of live-stock; and in the mixed system of husbandry of the United Kingdom, it must be recollected that by far the greater portion of the proceeds of the farm is obtained by natural products.

But, however desirable it may be to possess a proper knowledge of the correct principles on the state and treatment of live stock should be founded, it is also important to be able to ascertain their value when ready for market, or to ascertain their progress while feeding. Experience and accurate observation are obviously the essential requisites for obtaining this knowledge; but it is to be kept in view that the opportunities of the farmer in this repect do not bear a comparrison with those of the butcher, with whom he has to deal. The latter has a never falling test, by which he can try the accuracy of his calculations, in having the animals afterwards killed and weighed; and thus from time to time, he is enabled to modify his views, and correct his more imperfect estimates—opportunities which the farmer rarely or never possesses. Long experience, indeed, will enable the farmer to form a tolerably correct estimate as to the value of his cattle when slaughtered; but even with the aid of this, it is still important to be able to test the correctness of opinions thus founded. To the young and inexperienced farmer it is still more important to be able to do so. This knowledge may be obtained by measurement, and easy calculation; or from tables constructed for the purpose, for the use of which the length and girth of the animal only are required.

The ascertaining of the weight of cattle by measurement is not a recent invention, tables for that purpose having been long in use. It may not however, prove uninteresting to those who may not have turned their attention to the subject, to know on what data such calculations are founded. This will also, by explaining the whole process, enable the farmer to determine with more confidence the value which he should attach to the results thus obtained. Even in this case a certain amount of experience is necessary. It is necessary for instance, to know whether the animals are marketably fat or not, it is also necessary to be able to form an opinion as to the effects of any peculiarity of conformation in the animals, which might affect the results obtained by calculation. The kind of animals, too, must be taken into account, the formulæ on which the calculations are founded being strictly applicable to oxen merely; so that in the case of bulls, or cows which have had several calves, allowances are obviously to be made.

In calculating the net weight of cattle, it may be mentioned that the weight of the four quarters only is taken into consideration, the remainder being usually considered as offal, including the hide, tallow, and various other matters; and these, taken together, are computed to be equal in value to one of the quarters, or to one-fifth of that whole animal. The proportion between the live and dead weight, is the primary object to ascertain in our calculations. This was long calculated at one-half the live weight, but subsequent experiments on the more improved breeds of the country, showed that this was by much too mall a proportion, it being more currently represented by the fractional quantity '605, the weight of the entire animal being assumed as 1. Having this datum, then, no difficulty is experienced in ascertainng the net weight from the gross weight; the latter being multiplied by '605 will give the result, in the same denomination in which the gross weight is given. By these means the application of the steel yard or weighing-machine at once effects the object, and this apparatus is accordingly frequently employed by amateur feeders to ascertain the progress of the different animals while fattening, as well as their value before being sold. In the case of experiments being made with the different kinds of food, their effects are easily tested in this manner; and even when only one description of food is consumed, the progress of the different animals is seen, when such as are not making a suitable return should be disposed of without delay

This method of calculating the value of cattle is simple, and, were a weighing-machine found on every farm, it would be all that could be desired, but as these useful appendages are not always available, the same object may be obtained by measurement. The dimensions required are the length from the point of the shoulder to the hindermost point of the rump, and the girth or circumference taken immediately behind the fore-legs. That these dimensions may be taken accurately, the animal must be standing in a natural position, in which case they bring the body into the form of a cylinder, the capacity or solid content of which is easily ascertained, and as in the former case, a certain proportion is found, from experience, to exist between the capacity thus obtained and the net weight. Strictly speaking, the form of most animals is such as to cause the girth to be rather elliptical than circular, but this departure from the cylinder being for the most part constant in all animals is, of course, taken into account in the formulæ by which the calculations are made. The length and circumference being then given, the rule to find the solid content is, to multiply the square of the circumference by the decimal, 07958, the area of a circle whose circumference is unity, and this product again multiplied by the length, will give the solid content in the same denomination in which the dimensions were taken, and being usually in feet and inches, their result will be in cubic feet.

The capacity of the animal being ascertained, the next consideration is the estimation of the proportion between it and the nett weight; and this is only obtained by actual experiment, as in the case before under consideration, in reference to ascertaining the nett weight from the live weight, as obtained by the use of the weighing-machine. Suppose an Ox measures 7 feet in girth, and 6 feet in length, the capacity is found in the foregoing rule as follows:—

7×7× 07958×6=49×.07958×6=3 89942×6 =53 39652, which is the number of cubic feet in the animal.

Now let it be further supposed that the weight of this Ox, when slaughtered, was 70 stones, which after repeated trials, is found to be the weight consonant with these dimensions, then the weight per cubic foot is of course found by dividing the total weight by the product thus obtained. For example, 70 divided by 23·39652. the quotient will be 2 993.—the precise proportion by which such calculations are usually estimated, so that for every cubic foot in the animal, ascertained as before directed, there will be 2 993 stones in the quarters alone. The rule, therefore is to multiply the square of the girth by ·07958, and the product thus obtained by the length, which gives the capacity in cubic feet, which multiplied by 2 993. the number of stones to a cubic foot of the animal, gives the weight in imperial stones, as required. It will be observed however, that the numbers ·07958 and 2 993 are both constant multipliers in the operation, so that they may be multiplied together, and their product only used, which will materially shorten the operation. Thus, ·07958×2 993=·23818294, but the number ·238 only may be taken, without incurring an appreciable error. Hence the rule for ascertaining the weight of an animal by measurement is to multiply the square of the girth by the length, and this product again by the decimal ·238, which will give the weight of the quarters in imperial stones.

Such is the method of calculating the weight of cattle by measurement, and such are the data on which it is founded. He before observed, these calculations refer only to animals of the ordinary degree of fatness, so that in certain cases allowances must be made. In the case of animals very fat, perhaps one-eighteenth or one-twentieth should be added to the weight thus obtained; and when below the ordinary state of fatness the same proportion should be deducted. A bull from having more flesh upon the neck, should have probably one-twenty-fifth added; and in the case old milch cows, for obvious reasons, one-tenth or one twelfth may be deducted. It will be apparent, however, that the precise amount of these additions and deductions is not subject to rule. The weight of the quarters being ascertained, there yet remains the tallow, hide, and other offal, to be taken into consideration in estimating the entire value of the animal. These or a certain portion of them, are allowed the butcher for his profit; but this is chiefly regulated by the custom of the place—a circumstance which, of course, the farmer will not fail to take into account.

The preceding observations have occupied more space than I originally intended, but I hope the minuteness of detail will be excused, and that they will not altogether be uninteresting to those who have not hitherto directed their attention to the subject.—*J. Sproule.*

SPRING AND SUMMER BEER.

As yet I have seen nothing in your pages relative to making Beer. Therefore I will present a recipe, and if you think it worthy of a place in the Farmer, please insert:—

A handful of hops and some boughs of spruce boiled in 2 or 3 gallons of water. Put 3 quarts of molasses and ¼ lb. of ginger in a cask that will hold 15 gallons, and pour the liquid in and shake them well; then fill up with cold and warm water, so that when the cask is full it will be about blood warm. Then pour in one quart of good yeast, and shake it well together. It will be fit for use in about 12 hours.

Half of a small vial of essence of spruce may be used instead of bows, and should be put in with the molasses and ginger. I have made beer by this recipe for a number of years, and know it to be good.—*Michigan Farmer.*

YELLOW BUGS.

An intelligent friend, who declares that he has found out how to save his cucumbers, melons, squashes, &c., from the depredations of the yellow bugs, has described to us the following method, which he declares will be found effectual. It has reason to recommend it, and so we give it to our readers, and shall try it ourselves:—

For each hill cut, say a dozen alder sticks about a foot long, split one end and insert a tuft of sheep's wool finely spread out. Set these out around the hill so that the wool from one will just meet that from its next neighbor on the circle. The bugs will always alight on that before descending to the ground and the plant; the wool entangles their legs and then they are unable to go farther. He says this hedge will also keep off the little black fleas. Try it—the cost is nothing—the labor little.—*Dreio's Plough-boy.*

A POTATOE DIGGER.

In answer to the inquiry of our correspondent "Viator," we give the following extract from the Report of the Committee on Agricultural Implements, at the late Fair of the American Institute:—

A Potatoe Digger, exhibited for a premium by Mr. A. C. Ketchum of Schenectady, N. Y. This machine consists of 2 parallel sides furnished with handles resembling those of a plough; they are about fifteen inches in width and two feet apart In front is an iron plate which is intended to penetrate the earth to a depth just below the potatoes required to be dug; behind this plate, near the bottom of the sides before described, are two pullies, one on each side; and on the upper edge of the sides, about three feet behind the others, are two more pullies, over which two endless chains revolve when the machine is in motion These chains are connected by small iron rods, about two or two and a half inches apart, and parallel to each other. When this machine is put in motion, the earth with the potatoes is passed over the plate on to the parallel iron rods, through which the chief part of the earth first falls, and then follow the potatoes. It is clear that this machine will not act advantageously in a tough, rigid, very wet soil. Your committee witnessed its operation in such a soil, and were not disappointed at its partial success. Nevertheless they are unanimously convinced, that the principles developed in this machine are such as to merit the encouragement of the Institute, on the ground that it will answer an excellent purpose in a light dry soil; of which Mr. Ketchum preserved a satisfactory certificate; and they have no doubt it may be improved so as to operate in other soils.—*Albany Cultivator.*

Cure for Burns.—After opening the vesticles, if they are formed the part is dipped in cold water, and then plunged, still wet, into flour, keeping it there for a minute or two; by this means a certain quantity adheres to the part and prevents the access of the air. It is remarkable that the flour falls in the scales from the surrounding parts the next day, whilst on the burn it remains adherent.—*Medical Times.*

A Hint to Young Married Women.—Never tell your own affairs to any old gossiping housewife. Let her appear ever so specious, so sincere, so candid; be sure to avoid her, and keep your own counsel: for the only reason she has for prying into your secrets, for insinuating herself into your confidence, is to learn that some error, some deformity exists in your family, on which she may feast with secret delight for a luxurious moment, and then share some of the choicest bits with her neighbours. Treasure this up, and act upon it, and it will save you years of mortification, if not of heart burning and sorrow.

CATTLE SHOW OF THE HOME DISTRICT AGRICULTTRAL SOCIETY, UNDER THE PATRONAGE OF HIS EXCELLENCY THE GOVERNOR-GENERAL.

The Home District Agricultural Society will hold a GRAND AUTUMN FAIR AND CATTLE SHOW, at the St. Leger Race Course, adjoining the North-Western extremity of Toronto, commencing on the morning of the second Wednesday of October next. The first day will be appropriated to the examination of Live Stock, Dairy Produce, Root Crops, and Grain. The second day will be devoted to the examination and trial of Agricultural Implements and the inspection of articles of Domestic Manufacture, the reading of Original Essays, and the sale and exchange of stock, &c.

For the best Essay on the profession of Agriculture as a Science,—A Gold Medal, to be worth £3 0 0. The Essay to be sent in to a committee to be appointed on the next regular day of the meeting of the District Society, to be held on the second Wednesday in August next.

Second best do.—A Silver Medal, to be worth £2 0 0.

For the best cultivated and well managed farm, in the Home District, taking in view the land, stock, and produce, with all the appendages. A Gold Madal, to be worth £3 0 0

Second best do.—A Silver Medal, to be worth £2 0 0.

CATTLE.

	£.	s.	d.
Best Bull 3 years old and upwards...	3	0	0
Second best do. do do	2	0	0
Third best do do do	1	0	0
Best cow 3 years old and upwards....	2	0	0
Second best do do do	1	10	0
Third best do do do	1	0	0

YOUNG CATTLE.

Bulls of two years old and under.

Best.....	1	0	0
Second best.....		15	0

Heifers two years old and under.

Best.....	1	0	0
Second best.....		15	0

YOUNG HORSES.

Best Horse under 3 years old.....	1	10	0
Second best do do	1	0	0
Best Mare do do	1	10	0
Second best do do	1	0	0
Best Horse under 2 years old.....	1	10	0
Second best do do	1	0	0
Best Mare do do	1	10	0
Second best do do	1	0	0
Best spring colt or filly.....	1	0	0
Second best do do		10	0

CATTLE.

Best yoke of fat cattle.....	2	0	0
Second best do do	1	10	0

BROOD MARES.

Best Brood Mare.....	2	0	0
Second best do	1	0	0

SHEEP.

Best tup of any breed.....	2	10	0
Second best do do	1	10	0
Best 3 Ewes.....	2	0	0
Second best do	1	10	0
Best six fed Sheep.....	2	10	0
Second best do	2	0	0

SWINE.

Best Boar.....	2	0	0
Second best do	1	10	0
Best Sow,.....	2	0	0
Second best do	1	10	0

FARMING IMPLEMENTS.

Best iron or wooden Scotch Plough manufactured in the Home District.	1	10	0
Second best do do do	2	0	0
Best subsoil Plough manufactured in the Province.....	2	10	0
Second best do do do	2	0	0
Best Fanning Mill manufactured in the Home District.....	2	10	0
Best Cultivator or horse hoe.....	1	5	0
Best Drill Barrow.....	1	5	0
Best portable Thrashing Machine, not requiring more than two horse power and capable of thrashing at least 100 bushels of wheat in a day of 12 hours.....	6	0	0
Second best do do do	3	0	0
Best Straw Cutter.....	2	10	0
Best Clover Machine.....	2	10	0
Best flax and Hemp Dressing Machine (portable,).....	6	0	0
Best Horse Rake.....	1	5	0
Best Ribbing Plough.....	1	5	0

DAIRY.

Best sample of 50 lbs of Butter.....	2	10	0
Second best do do do	1	5	0
Best 100 lbs of Cheese.....	2	10	0
Second best do do do	1	5	0

DOMESTIC MANUFACTURES.

Best pair of Woolen Blankets manufactured in the District.....	1	0	0
Second best do do do	0	10	0
Best 10 yards of Full Cloth.....	3	0	0
Second best do do	2	0	0
Best Woollen Carpet (50 yards).....	3	0	0
Second best do do	2	0	0

AGRICULTURAL PRODUCE.

Best sample of Flax of not less than 112 lbs.....	3	0	0
Second best do do do	2	0	0
Best sample of Hemp not less than 112 pounds.....	3	0	0
Second best do do do	2	0	0
Best pocket of Hops.....	2	10	0
Second best do do	1	5	0
Greatest quantity of Hops grown in the Province, and exhibited in the City of Toronto for sale on the second day of the Exhibition.....	5	0	0
For the greatest quantity of Broom Corn, grown in the District and exhibited as above.....	2	10	0

GRAIN AND SEEDS.

Best 2 bushels of Fall Wheat	1	0	0
" " Spring Wheat.....	1	0	0
" " Barley.....		10	0
" " Oats.....		10	0
" " Peas.....		10	0
" " Canary Seed		15	0
" " Hemp Seed.....		15	0
" " Flax Seed.....		10	0

ROOT CROPS.

Best 3 Bushels of Potatoes.....		10	0
" " Turnips.....		10	0
" " field Carrots.....		10	0
Best 50 roots Mangel Wurtzel.....		10	0
Best 3 bushels field Parsnips.....		10	0

FIELD CROPS.

Best acre of Fall Wheat.....	2	0	0
" " Spring Wheat.....	2	0	0
" " Potatoes.....	2	0	0

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