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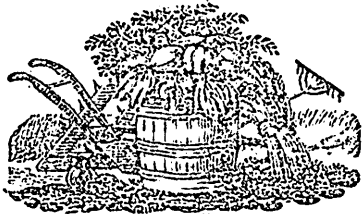
THE COLONIAL FARMER,

DEVOTED TO THE AGRICULTURAL INTERESTS OF NOVA-SCOTIA, NEW-BRUNSWICK,
AND PRINCE EDWARD ISLAND.

VOL. 3.

HALIFAX, N. S., JULY 16, 1843.

NO. 2.



THE COLONIAL FARMER.

HALIFAX, N. S., JULY 16, 1843.

SMALL FARMS.

It appears to be generally acknowledged that the Flemish are the best farmers in Europe; their farms are small; they collect and preserve all the manure they can; keep all the stock they can feed well; and make their land resemble a garden, by their perfect cultivation; always keeping up a constant rotation of crops, and making so much manure that they do not find it necessary ever to employ a naked fallow, or to lay down their ground for pasture, their cattle being fed all the year in stables, which are kept so very clean that they appear to have surprised the Scotch farmers who have visited them. A Flemish family is often supported by the produce of six or eight acres, in a state of comfort much superior to that of Scotch or English farm labourers, thus giving a practical proof of the wisdom of working no more land than can be well cultivated. The following extracts of a letter from Mr. Gillet, Directeur des affaires publiques a Bouzelles, to Sir John Sinclair, deserve attention. "I have examined with attention the situation of agriculture in most countries in Europe, and do not hesitate to affirm that it is no where so well understood and practised as in the Low Countries. I do not except my native country, England, though I am ready to admit that she is as much advanced in the important science beyond France, as the Low Countries are beyond England. This will not surprise you, Sir, when you consider that while the fortunes of England and France were divided between agriculture, industry, colonization, and external commerce, those in the Low Countries were principally employed in the advancement of agriculture alone, by establishing *small farms*. This system has succeeded admirably well in Flanders and Brabant, where land is every where in the highest state of cultivation, and offers a wonderful contrast with its situation in the Liege country, County of Namur, and in the Province of Hainault, which bounds Flanders and Brabant. There the system of large farms is still the common practice, and very little progress has been made within fifty years. The vast disproportion of the product of those Provinces, when compared with that of Flanders and Brabant, offers a very strong argument against the system of large farms." "It is an error into which many have fallen, for want of observation, and a knowledge of the interior of the country, to believe that the soil of the Low Countries was originally good. It is the almost incredible industry of the peasantry in Flanders and a part of Brabant which has rendered the soil so productive. The Pays de Waes, a prodigy of art, was forty years ago a bruyere, a heath or waste. It is now perhaps the richest province in the world."

RUBINA JELLY.

This is very much used in Russia being constantly eaten with roasted Hare, Grouse, and other game; to prepare it the berries of the Mountain Ash or Roan tree, ripe and cleanly picked, are put in a pot of boiling water till the juice parts from them, when it is strained through a fine sieve, but the berries must not be pressed—Weigh the juice, add to it an equal weight of loaf sugar, and boil it to a jelly.

SAVE THE SUGAR MAPLES.

The State of Vermont made, in the year 1842, 6,147,211 lbs of Sugar, and the State of New York, in the same year, made 13,353,109 lbs.

If the Sugar maples that spring up with the second growth of hard wood, were preserved, and allowed to grow, a great proportion of the sugar used in this Province might be manufactured in it, for there is no tree that thrives better than this on a large proportion of the land formerly occupied by hardwood. When the farmer's surplus produce sells at a low price he should buy nothing that he can make or raise on his own land. Were the same attention paid to the cultivation of the sugar maple here that there is in Vermont, a large sum would be retained in the Province which is now expended in the purchase of Sugar.

SWINE.

From Coleman's fourth Report of the Agriculture of Massachusetts.

"Until within a few years a breed known as the Grassfed hogs constituted the principal stock. This was a hog, raised with little other food than Clover pasturage for the first six months, of a white colour with black patches sprinkled over him, long and well formed, of good thrift, and who, with good keeping at eighteen months old, was easily brought to 400 and 500 pounds weight. Within the last few years the Berkshire hog has been introduced. His symmetry, thrift, cleanliness, fineness of bone, his excellent shoulders and hams, and above all, his good humour and his marked deficiency in the organ of taste, secured universal favour. In my visits among the farmers since the introduction of this race, I have been amused with their enthusiasm for their swine, resembling that of Parson Trulliber in Fielding's history of Joseph Andrews; and in finding them, I had almost said, more proud of their Berkshire pigs at their troughs, than of their chubby and rosy-checked children round their supper-tables. I am a great admirer of the Berkshire swine, but I could never sympathise in those preferences; and my respect for human nature has considerably increased since the progress of the blessed Temperance reformation, and since men are now seldom seen as formerly with all rationality extinguished, and even their animal nature outraged and degraded.

We have been compelled, however, in this as in many other cases, to witness the capriciousness of public favour; and to adopt with the variation of only a letter, the familiar proverb, and say in this case that "every hog must have his day." The popularity of the Berkshire swine is on the wane. It is objected to them by many farmers that they are not large enough, though they are easily made to reach at fourteen months to 300 or 350 lbs.; and further, that they do not cut up well, and that the fat on their backs

is not thick enough, especially for packing down for the men, who would be glad to have their pork all fat, and whom I have seen spread their uncooked salted fat pork, as landmen spread butter, on their bread. The former objection is not made by all persons, as many would prefer for their tables the pork of a hog weighing 300 lbs. to that of hogs weighing 600 lbs. of which I have seen many in our market. With respect to the latter objection I was half disposed at first to consider it a mere caprice, but that E. Phinney of Lexington, a farmer in this matter "not unknown to fame,"—and another most respectable farmer of Franklin county, admit that there is some truth in it; and they as well as many others, prefer a cross to the pure blood. The impression is becoming general, and the butchers in Quincy market are unanimous in their unfavorable opinion of the Berkshire hogs. They admit that their hams and shoulders are good for bacon, but their backs where they most require it have no depth of fatness, and they are therefore unsuitable for salting. They are good breeders and nurses." It is but just, however, to the Berkshires to say that the unfavourable impression in regard to them, though general, is not universal. An intelligent and very exact farmer at Braintree, B. V. French, has found them to answer his expectations. Upon recently killing a number, he was well satisfied with their appearance, and is of opinion that much of the prejudice which exists against them belongs properly to the impure but not to the genuine race.

The introduction of the Chinese hogs into this country and into England seems to have been the foundation of all the extraordinary improvements which have taken place in this race of animals,—improvements which within less than half a century, have doubtless enriched the State of Massachusetts many hundreds of thousands of dollars, and the country by millions. The effects of this cross with other swine have been to give fineness of bone, plumpness and fullness of form, extraordinary thriftiness, and quietness of demeanor. [Seventy years ago we remember seeing numbers of this breed at Newhaven in Connecticut, where they were known by the name of the Guinea breed. It is not improbable that they might have been brought from African Islands, as we have been informed by seamen that they are now raised at the Cape Verde Islands, and also at Tahiti and other islands in the Pacific. They were of quick growth, weighing less than 200 lbs. with small bones, short legs, short heads, broad backs, very thin skin, and pork much superior to that from the large breed.—*Ed. Col. Farmer.*] The old race of hogs seemed to be of the wolf species in temper as well as condition, and were the personification of ugliness and rapacity. The first introduction of one of these animals into a secluded part of Scotland within the last century is matter of comparatively modern history. Having got loose from his sty, he appeared to the terrified imaginations of those simple people as the arch fiend himself, and crowds hovered together through fear—the parish schoolmaster being at their head with an open bible, to endeavour to lay this evil spirit! The animal now in his improved condition, is regarded as one of the farmer's best friends; he eats what nothing else will eat; he is a general scavenger, and an excellent composter of manure. His own manure is one of the most enriching substances which can be supplied to the soil, though not one of the most lasting in its effects; and his flesh is the most frequent dish upon the farmer's table. This county may boast of great improvements in their swine; a Mr. McKay of Boston, owning a farm in Weston, obtained from abroad some years since, a valuable hog, whose natural good qualities by good management he greatly improved. Some

of this breed of swine have been most remarkable for thrift and weight. Besides this, a hog called the Mocho hog, long, round, and thrifty, whose pedigree is not known, has been introduced here. Some of the best hogs that I have seen have been from an admixture of these three bloods. Mr. Phinney emphatically approves this cross; and the weight of his swine when killed, of which I subjoin an account, establishes the soundness of his judgment. In 1840 Mr. Phinney sent the following hogs to market.

February 6.	February 17.	months old.
1st weighed 407 lbs.	1st weighed 763 lbs.	20
2d " 414	2d " 591	15
3d " 413	3d " 476	15
4th " 304	4th " 430	12
5th " 464	5th " 475	12
6th " 366	6th " 465	12
	7th " 430	12
	8th " 454	12

In 1841, the subjoined is a list of fifteen Berkshire and Mackay hogs from the same farm.

February 22, 1841.	1st weighed 528 lbs.
1st weighed 734 lbs.	2d " 523
2d " 655	3d " 517
3d " 579	4th " 503
4th " 574	5th " 501
5th " 556	
	1st weighed 487 lbs.
	2d " 480
	3d " 476
	4th " 441
	5th " 400

The grassed hogs are regaining their popularity. They have been, to a degree, crossed and intermixed with various valuable breeds in the interior, and are now preferred to all others in the Brighton Market. With good care and keeping at 15 and 18 months old they are easily carried to 500 and 600 lbs."

Mr. Phinney's swine establishment at Lexington is among the most extensive in the Country. His number of fattening swine averages about 100, with fifty store hogs, and they are killed in February and March, when from 10 to 18 months old, being of the fall and winter litters of the previous year. His pens are well arranged, seldom occupied by more than three or four in a pen. They have a manureyard attached to each pen, into which bog mud and litter are thrown for their manufacture and compounding, and they have always a dry and comfortable bed. They are fed regularly three times a day. I shall subjoin an account given by himself of his mode of management. "An enquiry is often made at what age it is best to slaughter them. On a large farm where much green herbage is produced, and where the value of the manure is taken into the account, the pigs killed at the age of 15 or 16 months give the greatest profit. When it is intended to kill them at this age, they may be kept on more ordinary and cheaper food for the first 10 or 12 months, or till within four or five months of the time of killing. The manure they make, and the extra weight of pork, more than pay the expense incurred in keeping them the longer time; but the spring pigs that are to be killed the ensuing winter and spring, must be kept upon the best of food from the time they are taken from the sow until they are slaughtered. The older class of pigs, for the first 10 or 12 months, are kept principally upon brewers grains, with a small quantity of Indian or Barley meal, or rice, ruta baga, sugar beets, &c., and in the season of clover, peas, oats, cornstalks, weeds, &c., they are cut green and thrown into the pens; the next four or five months before killing, they have as much Indian meal, or rice, with an equal quantity of potatoes, apples or pumpkins, as they will eat, the

whole being well cooked and salted and given to them about blood warm. During the season of fattening, an ear or two of hard corn is every day given to each pig. This small quantity they will digest well, and of course there is no waste. Shelled corn soaked in water made as salt as the water of the ocean, for 48 hours, with a quart of wood ashes added to each bushel and given to them occasionally in small quantities, greatly promotes their health and growth. Their health and appetite is also greatly promoted by throwing a handful of charcoal once or twice a week into each of their pens. Their principal food should, however, be cooked thoroughly and nicely. From long practice and repeated experiments, I am convinced that two dollars worth of material well cooked, will make as much pork as three dollars worth of the same material given in a raw state. Pigs when first taken from the sow should be treated with great care, to prevent them from scouring and becoming stunted; when either of these happen it will require many days, and sometimes weeks, to put them again into a healthy growing condition. When first deprived of the maternal food, a little new or skimmed milk, boiled, and slightly salted, and given to them often and in small quantities, will prevent scouring and greatly promote their growth. If intended for killing at the age of 9 or 10 months they should be full-fed all the time and made as fat as possible. If on the other hand they are intended for killing at the age of 15 or 18 months, they should not be full fed, nor be made very fat for the first 10 or 12 months. To satisfy myself of the benefit of this course, I took six of my best pigs, eight weeks old, all of the same litter, and shut them in two pens, three in each. Three of these I fed very high, and kept them as fat all the time as they could be made.—The other three were fed sparingly upon coarse food, but kept in a healthy growing condition, till within four or five months of the time of killing, when they were fed high as the others. They were all slaughtered at the same time being then 16 months old. At the age of 9 months the full fed pigs were much the heaviest, but at the time of killing the pigs fed sparingly for the first 10 or 12 months weighed, upon an average, fifty pounds each more than the others.

On regular and systematic feeding, and clean and dry bedding, the success of raising and fattening swine very much depends. A faithful feeder also who has some skill and taste, and withal a little pride of vocation, is indispensable."

Extract of a letter from the late John Lowell, to Mr. Colman.

"I may say that I have fully and clearly ascertained, from a trial of twenty years, that young pigs of from 25 to 30 lbs. will give nearly double, in some remarkable cases three times, as many lbs. as shoats of six months weighing from 100 to 150. I have taken two pigs of 100 lbs each, age 6 months, and never was able between May and November to get them above 180, rarely above 170. I have taken three pigs of about 30 lbs each, and on the same food I gave to the two, they would weigh from 170 to 180 each in the same period:—nay, I have taken pigs of 200, and never could get them to weigh above three hundred in seven months. 3 pigs of 30 cwt. each, will give, ordinarily 510 lbs less, original weight 90—gain 420 lbs.—2 pigs of 100 weight each, will give, ordinarily 340 lbs less, original weight 200—gain 140 lbs. But the three pigs of 30 will not consume for the first 3 months half so much as the two of 100 each. There is nothing new or remarkable in these facts. It is the law of the whole animal creation. It is true of the calf and man. The child of 7 lbs quadruples its weight in 12 months: and the calf of 60 wt, if fine and well fed, will weigh 600 weight at the end of the year, and (if a female) will not double the last weight at any age. N.B.—The weight of pigs at purchase, is live weight, and at sale, dead or nett weight."

TURNIPS.

Turnips that are sowed very late, should be thinned so as to leave them a foot apart on an average, and a little dry ashes should be strewed over the leaves in the morning, when the dew is on them, as soon as they are two inches in length. The caterpillar often destroys turnips that are crowded thickly together, when those that are very thinly sowed, escape. The young caterpillars are at first hatched on the leaves, covered with a web, and are many of them destroyed by the ashes, which should be sowed for two or three weeks in succession. A slight dusting of lime that has been slacked for three or four weeks is more efficacious.

COMMON GRUB, OR CUT WORM.

The Robin, when permitted to do it, destroys a great number of these grubs, and also some of the Moths who are their parents. We have seen a Robin constantly attending a man who was working in a garden, for the purpose of collecting grubs as they were brought to the surface; he became so familiar that he was frequently within ten feet of the man, who never permitted the bird or its nest to be disturbed, nor did he cease from his daily superintendance of the hoeing and weeding till the young birds left the nest. This bird appears to scent the grub when covered with earth, for he may frequently be seen to make a hole in the ground with his bill, in searching for them. Chickens are very fond of grubs which they appear to prefer to earth worms. They are easily taught to attend a person who is hoeing in a garden. If the hen is shut up in a Coop which does not confine the chickens, and the ground near the Coop is frequently hoed over, to bring worms to the surface for them, they soon learn to know the sound of the hoe, and when half grown, will go a considerable distance to follow the person who is hoeing. Toads feed much upon grubs, they should be preserved as much as possible; they are disliked for their ugly looks, but they do not intrude themselves upon our sight, and there are few birds whose note is more welcome in the spring than the trill of the toad, the unfailing harbinger of mild pleasant weather, and, at a later season, a notice that rain is at hand.

The Robins when not disturbed, will build all round our fields, and protect them from vermin: they ought not to be killed in the spring, the only mischief they do is among the currants and cherries. The small blue-birds and gray-birds devour a multitude of grasshoppers and frog-hoppers, but never injure the crops. The night-hawk feeds its young with the large brown beetle which breeds the white grub with the yellow head, that injures the grass in old pastures, by consuming the roots. It is the interest of the farmer to protect the small birds and leave them undisturbed. The grey linnet is the only bird that has ever done much mischief here; they formerly came in great numbers and destroyed a great proportion of the oats, but for many past years they left visiting us.

For the Colonial Farmer.

ELEMENTS OF AGRICULTURAL CHEMISTRY AND GEOLOGY.

[Continued from No. 23]

III.—SUBSTANCES WHICH ARE THE RESULTS OF VEGETATION AND MODES IN WHICH THEY ARE PRODUCED.

We have already seen that Carbon, Hydrogen, Oxygen and Nitrogen, are usually found in nature, not in the simple state, but in various compound forms, such as Carbonic Acid, water, &c. In like manner these four elements when they enter into the composition of vegetables, combine with each other in various ways,

forming all that almost endless variety of woods, resins, oils, gums, acids, sugars, and other matters which are contained in plants, and can be prepared in no other way than by the agency of vegetable life.

It is to the presence of different compounds of these descriptions that vegetables owe the diversity of tastes, odours, colours and nutritious, poisonous or medicinal properties, which we find in different plants, and in different parts of the same plant; a diversity so great that we can scarcely help considering every vegetable to be endowed with the power of arranging in ways peculiar to itself, the simple substances contained in its food.

To examine in detail all this vast variety of vegetable products, and endeavour to discover the causes of their production, would form an interesting study; but it would lead us far from the applications of Chemistry to common Agriculture, and would involve us in some of the most difficult questions in the science; questions many of which are yet unanswered, or but very imperfectly understood. There are however, some of these substances so generally diffused among plants, or so valuable to man, that they must receive our attention, if we would wish to know of what the produce of our fields consists, how it is prepared, or how it can be best obtained.

A large proportion of the substance of vegetables consists of compounds destitute of nitrogen, containing therefore only three of the four organic elements. Of these substances we may notice,

1st. *Lignin or Woody fibre*, so named because wood is almost wholly composed of it. It is present in the stems roots and leaves of nearly all plants, forming the sides of their cells and vessels; and Hemp, Flax and Cotton consists of Lignin nearly in a state of purity. When the wood of different trees is analysed, it is found to vary somewhat in its composition, probably because the cells and vessels of wood become incrustated or partially filled with other matters which cannot be separated from the true woody fibre. It is perhaps for the same reason that the composition of cotton, pith and the cellular matter of soft vegetables, is found to differ from that of the wood of trees. This difference appears in the following table:

	Wood.	Cellular matter.
Carbon.....	50.00	44 80
Hydrogen,.....	5.55	6.20
Oxygen.....	44 45	49 00
	100.	100.

The most remarkable fact shown by these analyses, is that the quantity of Oxygen is nearly 8 times that of the Hydrogen, or in other words, that these two elements are in the proportions required to form water; so that woody and cellular matter may be viewed as composed of Charcoal and water; though it is evident that the water or its elements, which thus compose more than half the weight of wood, must be in a very different state from that in which this fluid is usually found.

According to the rule of definite proportions formerly stated, considering the equivalent of Carbon to be 6, that of Oxygen 8, and that of Hydrogen 1, and dividing the quantities given above by these numbers, we find the shorter and more accurate expressions of the composition of the two forms of Lignin, to be

Wood,	C 12,	H 8,	O 8
Cellular matter	C 12,	H 10,	O 10

2. *Starch*. This substance is the wood contained in nearly all plants, but in a different form and for different uses. While wood is the material of the cells and vessels, starch is at particular sea-

sons stored up as a reserved stock of food, to be employed when other supplies fail, or when a growth more luxuriant than ordinary is required. Many plants whose stems die in autumn, form large roots or underground stems, containing matter fitted to send forth and nourish vigorous shoots in spring, and this matter very frequently consists in great part of starch. The tubers of the potatoe for instance, principally consist of cells each of which contains a little grain of starch, destined, if not used as food by animals, to be drawn off by the vessels of the sprouting eyes in spring. Grains of all kinds and many other seeds, contain large quantities of Starch, destined to furnish the first food to the seedling plant; thus Wheat contains from 39 to 77 per cent of starch; Barley, 67 to 70; Oats, 70 to 80; Rice 84 to 85. Starch therefore forms a large part of bread, and most other kinds of vegetable food; in using which we are applying to the promotion of our growth what plants have prepared for theirs.

Starch when pure is colourless and tasteless, it is not dissolved by cold water, but in boiling water it is adily soluble. It consists of Carbon 44, Hydrogen, 6 2, Oxygen, 49 8, in 100 parts, so that its composition is nearly the same with that given for cellular matter, and may like it be represented by C 12, H 10, O 10.

3 *Gum* Of this substance cherry gum and gum Arabic are good examples. It is found in the sap of most plants, and in nearly all those roots and seeds used for human food. Gum dissolves in water, forming mucelaginous solutions; that obtained from different plants differs in solubility, some varieties being soluble only in hot water, others in cold, and others forming a kind of jelly. The composition of gum is the same as starch, C 12, H 10, O 10.

4 *Sugar*. The most familiar example of this substance is common cane sugar which is found abundantly in the sugar cane, maple, Indian corn, Beet, and various other plants. The composition of Cane Sugar is precisely the same with that of starch and gum.

In a number of plants varieties of sugar are found, differing somewhat in chemical constitution from that of the cane. The most important of these is *Grape Sugar*, which contains more of the elements of water than any of the substances before noticed, its composition being, C 12, H 12, O 12. This sugar is less soluble in water and less sweet than the common variety. It is found in honey, in fermented liquors, in the grape, gooseberry, apple, plum and most other fruits.

Before proceeding farther, we may pause for a little to consider some of the *mutual relations* of the four substances which have been just described. They are produced by vegetables in greater abundance than any other substances, and are concerned in most of the changes which take place by the agency of vegetation. That they may be more readily accessible to all plants, they are composed of Carbon, Oxygen and Hydrogen alone, so that whenever Carbonic acid and water are present, the materials for their formation can be obtained; and these as we have already seen, may be found in every place where vegetation can subsist.

While they all consist of the same elements, they contain the same or nearly the same proportions. In this respect we may indeed regard them as only one substance, capable of assuming several different forms. In its soluble states of gum and sugar circulating in the sap, and supplying nourishment to every organ and in its more insoluble forms stored up as starch for future nourishment; or fashioned into tough woody walls of cells and vessels.

That these substances thus nearly related, may be changed from one form to another, that sugar may be converted into wood or

starch and gum into sugar, and vice versa, we have abundant proof in many common processes. If barley be moistened and thrown into a heap, as in the process of malting, as soon as it has sprouted we find a great part of its starch converted into sugar; the sugar of the beech or of maple sap, when these plants begin to grow in spring, soon disappears and becomes converted into woody stems and leaves; and when a potatoe is planted and begins to grow, its starch furnishes the material for its stems and foliage, after having first been taken up in the sap in the form of gum and sugar.

Such changes as these may be produced by art, and by examining how this is done, we may be better able to understand how they occur in the living plant. They may be effected

1. *By heat.* If sawdust be carefully washed, then dried in an oven till it becomes crisp, and afterwards ground, the wooden flour thus produced, if boiled in water, forms a jelly having the properties of starch, and when fermented and baked gives a light and not palatable bread. By merely applying heat and moisture, we can thus convert woody fibre into starch. Again, starch, when exposed to a heat below 300° F. becomes yellow or brown, and in this state is soluble in cold water and in other respects has the properties of gum. Starch changed in this way is called British gum, and forms a good substitute for gum Arabic. Lastly, in the manufacture of British gum, a portion of the starch is sometimes changed into sugar. Heat, therefore alone is capable of transforming into each other, starch, gum and sugar.

2. *By Acids and Alkalies.* If to a quantity of fine sawdust or linen rags, we add more than its weight of sulphuric acid, and rub the mixture in a mortar, the wood or linen will be converted into starch and then into gum. If to the gum thus produced we add more sulphuric acid, and a quantity of water, and allow it to stand for some time, the gum will be found changed into grape sugar. Any of the varieties of wood, starch or gum, may thus be converted into sugar; and in France potatoe starch thus transformed is employed to some extent in the manufacture of brandy and fermented liquors. 100 lbs of starch mixed with 600 of water, and 10 of sulphuric acid, by boiling for seven or eight hours, produce from 165 to 120 lbs of grape sugar.*

Cane sugar may also by the action of acids be readily changed into grape sugar; and it is for this reason that fruits preserved in sugar often become candied. The vegetable acids of the fruit convert the cane sugar into grape sugar, and the latter being less soluble crystallizes in little lumps.

Alkaline substances are also capable of affecting some of these transformations. If sawdust be boiled in a strong solution of pure potash, a portion of the woody fibre will assume the properties of starch.

Since we can so easily, by artificial means, produce those transformations, it cannot be doubted that they can be still more readily effected within living plants. Human art can however imitate only one half of the processes of this kind which are known to take place in vegetables. We can change wood into starch, and starch into gum, and gum into sugar; but chemistry is altogether unable to reverse the process, and convert sugar back again into wood.

The plasticity of these compounds of Carbon and the elements of water, is not however limited to mutual transformations. By various kinds of decomposition they can be changed into other substances such as alcohol and Vinegar. One of the most common of this kind is fermentation. When to a decoction of malt or to

the juices of sweet fruit, we add a little of any matter in a fermenting state (yeast for instance), Carbonic acid begins to escape, and in time the grape sugar contained in these liquids is found to be changed into alcohol or spirit. In this case

Grape sugar, or } is divided into { Alcohol—C 8, H 12, O 4
C 12, H 12, O 12 } into { Car Acid—C 4, O 8

C 12, H 12, O 12

The Carbonic acid escapes from the fermenting liquid in bubbles, and the alcohol remains dissolved. By further exposure to the air, the alcohol thus produced absorbs a portion of Oxygen from the atmosphere, and is changed into vinegar.

These artificial modes of transforming wood starch and vinegar, though they may not show us exactly the ways in which those changes take place in plants, are sufficient to give an idea of some of the means by which they may be effected. We may now consider another class of bodies, found in most plants, the

VEGETABLE ACIDS.

1. *Acetic Acid or Vinegar* is one of the most abundant. It is present in the juices of many plants, is produced by the germination of seeds, and by the fermentation of dead vegetable matter. The composition of Vinegar is Carbon 3, Hydrogen 3, Oxygen 3, so that it differs from sugar in containing a smaller portion of the elements of water. In conformity with this similarity of composition, a solution of cane sugar with a little vinegar added to it, when exposed to the air for some time, becomes changed into a solution of vinegar.

2. *Tartaric Acid*—is composed of C 4, H 2, O 5, containing therefore proportionally more Oxygen and less Hydrogen than the Acetic. It is contained in sorrel, and in some berries, and in combination with potash, abounds in the grape. The Bitartrate of Potash obtained from the latter fruit, is the well known Cream of Tartar.

3. *Citric or Lemon Acid* differs little in composition from the last. (C 4, H 2, O 4.) It gives acidity to the Lemon, Orange, Cranberry and Strawberry.

4. *Malic Acid*—Appears to have the same composition with the Citric. It gives their sourness to the unripe Apple and Plum.

5. *Oxalic Acid* is found abundantly in many plants, usually in combination with lime or potash. It exists in the sorrels, in Rhubarb, and plentifully in many of the Lichens which grow on trees and stones. Oxalic acid contains no Hydrogen, but like the Carbonic acid, consists of Carbon and Oxygen, in the proportion of C 2, O 3.

These and many other acids occur in greater or less abundance in most plants; and though they do not constitute an important part of their bulk, they are of some consequence. They communicate to many fruits and other articles of food an agreeable acidity. They combine with and render soluble and otherwise suitable for plants, many of the earthy substances which are found in them. They serve, in the modes before noticed, to effect changes in the substances contained in the tissues or sap; for example, in converting starch into sugar. And lastly, they are themselves capable of being transformed into various useful products, as we often see to be the case in the conversion of a sour unripe fruit into a sweet ripe one.

To be Continued.

REMEDY FOR THE BOTS.—The Southern Cultivator says, that strong tea made of common garden Sage, is an effectual remedy for the Bots. Give a quantity of strong tea, and the horse will recover in a few minutes. A branch of sage chopped into the feed horses once a week, will prevent the Bots altogether.

* This process might probably be usefully employed in making sugar for domestic use; grape-sugar of this kind would, for many purposes, form a substitute for that of the cane.

ECONOMY.

Editors of the C. N. P. Farmer.

Gentlemen—Will you give place in your columns, to a few desultory thoughts on Economy? I suppose you are not much troubled with communications from the ladies on this important subject—for I believe that we (as a class) have paid less attention to it, than gentlemen of small and reduced fortunes could desire. Dr. Johnson thought it was the duty of every individual to make some improvement in the chart of life; to point out the rocks and quicksands where he has suffered loss himself; and I suppose it is equally the duty of him who has sailed on a smooth sea, to leave his compass and his wake for the direction of future travellers.

Observation is worth something as well as experience; and when we see a poor debtor surrounded by a set of clamorous creditors, grasping the last cent which the law allows, we may realize all the evils of mismanagement and extravagance, without partaking of their bitter fruit. My attention has been called to this subject, by the failure of several farmers, and as (in such cases,) whole families are involved in the general wreck, I trust I shall be pardoned if I offer a few suggestions to those wives and daughters, who share proportionably in the weal and woe of the farmers' life.

First, if debts have been contracted, it is for you to save the means and help lay in store sufficient to meet those dues. I have always noticed that there was a better state of feeling in those families in which the woman knew something of business matters, than in those in which she is entirely ignorant of the extent of her husband's resources. In the latter case, it is not uncommon for her to desire and expect a supply of means which it is impossible for him to furnish. The short and decisive refusal, without the why's and wherefore's, is the end of the matter with him; but not so with her.—She thinks it over, the denial rankles deeper and deeper, till she half believes it was the result of unkindness alone.—Now very likely if she knew all the circumstances of the case, she would not have expected or even asked for what she knew it was impracticable to purchase; for it must be remembered that we (a majority of us at least,) are reasonable beings, and of the minority, I know there is a class (though I acknowledge it with shame,) who are determined to gratify the suggestions of a giddy fancy, whether they are able or not. Many a farmer is injured if not positively ruined by the amount of his store bills. The silk dresses and satin shawls, the fine kid gloves and expensive bonnets, with all the corresponding things for table, parlor and chamber create a style of things too expensive for the man who has no income but the products of a small farm. This passion for dress and fine living is owing altogether to a perverted taste, a false estimate which we place upon appearances. Rustic attire renders us none the worse, nor gaudy trappings none the better.

I have noticed also, that the plain farmer's fare is giving place to the luxuries of the more opulent. Instead of the products of the farm alone, they feed you with the products of other climes—Expensive tarts and pies, rich cake and sweetmeats, with the mackerel, shad and steak, which are often bought, create debts to the butcher, larger than a farmer (unless he is a very wealthy one,) ever ought to pay. My plan is to live plain myself, and give my company the same sort of living. Better indeed to give them the plainest food, and furnish nought but cold water, "sparkling and bright," than present them with choice viands, fine Java, and the best of Old Hyson, at the expense of our creditors. Let us not feel willing that others should suffer loss by our excesses. Let us not say their gains were obtained by fraud and oppression, and no matter if they do lose. It is enough for us to see that their de-

mands as far as we are concerned, are promptly met. Let us become like the women of the Old School, simple in our diet, economical in our dress, cheerful in our labor, and patient in our suffering. Ours is indeed a life of care and labor, but it is one favourable to the enjoyment of true happiness, and the cultivation of our moral nature. We need not sigh for the ease and indolence of the fine lady, for could we but feel the languor and ennui that oppresses her, we should sigh again for that healthful labor that calls us up at the rising of the sun, and gives us but little respite till the going down of the same. Now in recommending strict economy and labor, I do not propose to abridge the comforts of life, but on the other hand to enhance all its joys. An active employment and simple diet give vigor and elasticity to the whole system. In fact they are the essential conditions of its regular and healthful action. Freedom from debt, and a consciousness of integrity, give satisfaction to the mind, such as the fraudulent debtor can never know.

Let it not be understood that we would encourage a mean and avaricious disposition, for this we consider still more reprehensible than a careless and prodigal one. But between two extremes, there is always a mean, and this is as true in household operations, as in the problems of Euclid. We may have all the real wants of life at a small expense, and in a simple way. We are surrounded by every thing in nature to render our situation pleasing, comfortable and happy. Heaven smiles propitiously upon our labours, for we have the bright sun and refreshing showers, without the asking—we have orchards and groves for the planting—and clustering roses and honeysuckles for the cultivation. I recollect that we were told in an Agricultural Address last year, that we must not cultivate flowers in old broken teapots and pitchers. Now as we are upon the principles of economy, and "pay as you go," we think this depends upon circumstances. If it is not convenient to pay a mechanic for a day's labor in making boxes, we had better use something else. Who would relinquish some cherished exotic, because she had nothing but an old broken pitcher to plant it in. I would rear some lovely plant or fragrant rose, if I had to beg the dust of the earth to nourish it, and the dews of heaven to water it. If I had nought but a hovel to shelter me, I should want a vine to creep over it, and sweet flowers to breathe their fragrance about it. It is the love of nature, the love of flowers, that gives us pleasure, and not the love of painted boxes, earthen jars, or china vases.

In relation to funds expended for the education of children, we have only to say, let them be expended judiciously.—Look well to it, that you get the worth of your money, for the country is filled with teachers who care as little for the improvement of your children, as the unfaithful hireling for the improvement of your farm. When we combine our efforts to educate aright the young, and overcome in them that repugnance to labor, which is so prevalent in our country, the condition of the farmer will be truly desirable. And it is for us to render it pleasing, not we who write, nor we who lecture about it, but for us who work. Habits of industry are formed far earlier by example than by precept, for the child who sees a whole household rise with the dawn and perform their allotted work with cheerfulness and pleasure, will naturally catch the spirit and copy the example of those around him. He who dislikes labor may prate about industry, and lecture daily upon its advantages, but the child, so long as he remains a child, will wonder (if it is desirable,) why father don't work and mother too. A drone placed in a community where labour was universal, where it was considered honorable, and rendered profitable, would

case to be a drone; how much easier than, to learn the child whose habits are all unformed.

There have been foolish fathers among the farmers, who thought their sons must obtain some learned profession, instead of a knowledge of their own noble occupation—and there have been foolish mothers who have brought up their daughters in idleness and ignorance (at least of household affairs), hoping they would marry wealthy tradesmen or fortunate speculators. But we believe this ridiculous burlesque upon common sense, is giving place to more rational views and expectations. But we are digressing from the subject upon which we proposed to write, and also verifying the old proverb, that when a woman begins to talk she never knows when to stop. So I will add no more, for fear of wearying you and taxing the courtesy of our Editors with too long a communication.

ECONOMIST.

Oneida Castle, June, 1843.

[From the Plymouth (Eng.) Herald.]

PRACTICAL DIRECTIONS FOR THE PLACE AND MANAGEMENT OF THE DUNG-HEAP.

Farmers have generally found out the advantage of having a Dung-pit instead of a Dung-heap; but still the rich drainage of the Dung is much of it allowed to run away; the Urine from the stable, &c. does not half of it run into the Dung, though it is the best part, the essence of the whole; and the privy manure, which is better still, is mostly neglected altogether.

All drainings from the stables, cow houses, and styes, should run into the pit, and the over-flowings should be caught in another pit, to throw back in dry weather.

The following is a cheap and effectual method of doing this:—When convenient, the pit should be on the north side of a wall or of some trees, to shade off the sun; or under a shed, to keep off both sun and rain; but these advantages cannot always be had without much cost.

Having selected the best place for your pit, first lay in way soil, peat, or any soil as different as possible from that of your farm, and give it a hollow surface, like a tea saucer. Upon this lay potato stalks, or any other vegetable matters, easy to ferment, and thereupon a layer of dung. Next a layer of vegetable matter, as peat, turf, bark, rotten weeds, ferns, leaves, or any kind of dead vegetables, to increase your quantity, and so every week, cover your dung from the stables, styes, &c., with three or four times as much dead vegetable matter, thus making up your heap in alternate layers. The urine should all run into the pit from stables and all, by narrow drains, where it will not be much exposed to evaporation; and another such drain should lead from it to a lower pit, to catch the overflows when there are any, and keep them to throw back upon the dung in dry times. This lower pit should be deeper and smaller than the other, and must never be allowed to overflow, as that would be waste. It may contain cabbage stumps, and other things difficult to work, which may be thrown back upon the heap as they rot.

The lower pit may be used as a store of liquid manure, for watering young corn, in May or June; which gives it a start, and much strengthens its growth. In leaky ground the bottom of the pits should be *stanchied* with clay; and stones or gravel stamped on to harden it.

The privy should discharge into the large pit, if possible, or else into the small one; and coal ashes (but not wood ashes,) are good to throw where this comes out.—Saw dust or turf dust from the

stacks do very well. House washings, as soap suds, &c. should also be thrown on the heap; but the wash of the country and heavy floods of rain should not be allowed to enter it, but be led into the meadows by other channels.

In wet seasons the top should be slanted to turn off the rain.

Each layer of dung being covered with a layer of peat or other dead vegetable matter, the whole heap when finished, should be crusted over with way soil or other earth, to retain the vapors.

The fermentation will be slower or quicker as it is more or less covered and compressed.

Whenever your heaps are made, whether in the yard or the field, give them a roof of some sort to absorb the drainage, and crust them over with soil, and mix all up with the soil before spreading. The drainage carries down the strength of the heap; sometimes enough to kill the seed in the place where the heap stood; whilst it would have been of the greatest benefit if spread out with the dung.

From the Newfoundland Journal of Agriculture.

PLOUGHING MATCH.

The Agricultural Society having offered the following Premiums for the present year, viz:

To the best Ploughman,	£3 0 0
Second do	2 0 0
Third do	1 10 0

This exhibition came off on Wednesday the 21st of June, on the farm called *Greenfield*, belonging to Mr. David Reed, situate about three miles to the westward of the town. Thirteen ploughs had been entered—they all started at the appointed time—noon. The competition was well sustained by the several ploughmen who did their work (several of them under great disadvantages) in a manner which deserved much credit; so nearly equal were their merits that the Judges acknowledged they experienced some difficulty in determining their award which we give in its proper place.

An excellent dinner which had been provided by the Committee of Management, was served up in their usual style by Mr. and Mrs. Palk, in a tent erected for the occasion, and His Excellency the Governor, who had arrived about 2 o'clock, and accompanied by his Staff and the President and Officers of the Society, inspected the ploughing, and was afterwards pleased to honour the Society with his presence, and the company, in number about fifty, sat down about five o'clock. The Hon. Judge Des Barres, President of the Society in the Chair, in which he was ably supported by the Hon. C. F. Bennett, as V. P. Ample justice being done to the *substantials*, and the cloth removed, the President called for a bumper to 'the health of our Gracious Queen,' which elicited such a burst of enthusiastic cheering as quite baffles our feeble powers to describe. As soon as this had subsided the learned President after a most appropriate and eloquent speech, (of which we regret we cannot give even an outline) called for another bumper, and then proposed 'the health of our distinguished Governor, His Excellency Sir John Harvey, the Patron of the Society.' After three deafening cheers and 'one cheer more' which followed, His Excellency rose, and with his accustomed dignity spoke as follows:—

Mr. President and Gentlemen;

I cordially thank you for the manner in which my health has been received by you, but more especially do I thank you for the enthusiastic loyalty with which that of our Gracious Queen has been drank.

A firm attachment to our glorious Constitution and to our noble Institutions, and above all, fervent loyalty to the Throne, should constitute the basis of every British association—you have evinced the most gratifying proof that this Society rests upon these foundations.

I meet you here this day with a degree of satisfaction proportioned to the interest which I take in the objects of the Meeting.

This may perhaps be accounted an inconsiderable beginning—nevertheless it is a *beginning*, and may therefore be regarded as one of the first steps towards the attainment of those beneficial results which I gratify myself with believing must not only gradually render Newfoundland less dependent upon the surrounding Colonies, in respect to many essential articles of Agricultural produce, but greatly contribute to the promotion of the comfort, prosperity and happiness of its inhabitants. I congratulate the Meeting upon this numerous and respectable attendance and upon the degree of public interest in the proceedings of the day of which that circumstance affords undoubted evidence—and I further congratulate you and the country (I address myself more particularly to the Farmers and Agriculturists) upon the fortunate reaction in public opinion, which has taken place in respect to Agriculture by the recognition not only by the people of this Island, but also by Her Majesty's Government of the great interests of that branch of its productions, which at no remote period was not only despised, and discouraged, but actually prohibited.

Gentlemen;

A great victory has been achieved over the prejudices of bygone days on this subject, and it will constitute a source of never failing satisfaction to myself individually, to believe that my humble efforts may in any degree have contributed to this desirable result—as it will of gratitude to the people and the Legislature of this Island, for the promptitude and cordiality with which their efforts have been responded to and maintained by them.

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Worked with two, three, or four horses at pleasure.

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THOMAS BLAIKIE.

Green Hill, West River, February 1.

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This is to certify that in December, 1841, I purchased one of Mr. Thomas Blaikie's *Stationary Threshing Machines*, and since that time by the great saving of time and labour resulting from the use of it, it has amply repaid me for the use of it. I therefore confidently recommend these machines to every farmer who may require such an article; and will venture to assure any person that if they purchase one they will never have reason to regret it, as an unprofitable investment of capital.

GEORGE McDONALD.

West River, January, 1843.

Having worked for some time with one of Mr Blaikie's *Threshing Machines*, with moving horse power, would recommend a superior article, and are certain, that no farmer could make a better investment than to supply himself with a machine of this kind.

SAMUEL FRASER.
JOHN FRASER.

New-Glasgow, January 3, 1843.

I have had Messrs. Frasers' *Threshing Machine*, made by Thomas Blaikie, threshing for me two or three days, and found to surpass my expectations. It done the work well, and three clean; and I would recommend it as a very superior article, as regards saving of labour and grain.

B. L. KERRPATRICK.

New Glasgow, January 3, 1843.

Having witnessed the *Threshing Apparatus*, made by Mr. Thomas Blaikie, in full operation, I give it as my decided opinion that it far exceeds, in usefulness, and saving of labour, any other of a similar nature which has come under my observation, and it is preferable to any other kind used in the Province.

JAMES CANNICHAN.

New Glasgow, January 3, 1843.

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