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THE
FARMER'S AND EMIGRANT'S
H A N D B O O K :

BEING A

FULL AND COMPLETE GUIDE

FOR THE

FARMER AND THE EMIGRANT.

COMPRISING THE

CLEARING OF FOREST AND PRAIRIE LAND—GARDENING—FARMING
GENERALLY—FARRIERY—COOKERY—AND THE PRE-
VENTION AND CURE OF DISEASES.

WITH COPIOUS HINTS, RECIPES, AND TABLES,

BY JOSIAH T. MARSHALL,

AUTHOR OF THE EMIGRANT'S TRUE GUIDE.

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1852

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TO

JOHN JACOB ASTOR,

OF NEW-YORK,

AN EMIGRANT FROM THE RHINE,

AN HONOR TO THE COUNTRY OF HIS BIRTH AND OF HIS ADOPTION,

This unpretending Volume is inscribed,

WITH THE VERY GREAT RESPECT OF

THE AUTHOR.

Historical Survey 9854 T

NOTICE BY THE PUBLISHERS.

In times past, the European emigrants, and even the settlers from the Atlantic States who removed to the West, were exposed to numberless trials and disadvantages, chiefly arising from the dearth of essential information concerning the various novel circumstances in which the change of their abode and habits of life unavoidably placed them. A luminous and ample Directory and Guide, comprehensive and minute, the result of experience and observation, has long been desired by both of the classes of persons referred to; and also by those who have been born and nurtured in the newly opened districts.

The Publishers are gratified that they are enabled to satisfy the universal demand, by a volume which comprises a mass of superior materials, partly derived from the most authentic sources, and partly obtained by extensive and protracted research. Some of the most valuable articles have been taken from the transactions of the New York State Agricultural Society; others have been selected from the periodical miscellanies devoted to the concerns of a farm and to the manner of life in the new settlements. To a monthly work published at Chicago, entitled the "Prairie Farmer," the author has frequently adverted, as a most useful and necessary instructor for all those who would derive advantage from long-trying skill and practical attention to the multiplied efforts of those who have passed through all the gradations of a settler's life; from the primary chopping of trees and a

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log-cabin, to the enjoyment of all the beauty and comforts of a luxuriant and fertile garden-spot, replete with opulence and ornament.

The contents of the "Farmer's and Emigrant's Hand-Book" can be accurately known and duly estimated, only by a recurrence to the Index of subjects; which occupies *twenty-four* columns, comprising about *fifteen hundred* different points of information respecting the management of a Farm, from the first purchase and clearing of the land to all its extensive details and departments. The necessary conveniences, the household economy, the care of the animals, the preservation of domestic health; the cultivation of fruits, with the science and taste of the arborist, and the production of the most advantageous articles for sale, are all displayed in a plain, instructive, and most satisfactory manner; adapted peculiarly to the classes of citizens for whose use and benefit the work is specially designed. Besides a general outline of the Constitution, with the Naturalization and Pre-emption Laws of the United States, there is appended a Miscellany of 120 pages, including a rich variety of advice, hints, and rules, the study and knowledge of which will unspeakably promote both the comfort and welfare of all who adopt and practise them.

The Publishers are assured that the commendations which the "Farmer's and Emigrant's Hand-Book" has received are fully merited; and they respectfully submit the work to Agriculturists, in the full conviction that the Farmer or the Emigrant, in any part of the country, will derive numberless blessings and improvements from his acquaintance with Mr. Marshall's manual.

HARTFORD, (Conn.) 1849.

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THE
FARMER'S AND EMIGRANT'S
HAND-BOOK.

CHAPTER I.

PURCHASING AND CLEARING TIMBERED LAND.

THOSE emigrants who decide upon purchasing wild land, whether forest or prairie, should be exceedingly cautious in every stage of the business. Everything depends on making a good selection. We have known persons to toil on for years, with little advantage to themselves, and then give back the land they had purchased and partly paid for, simply because of having made a bad choice at the outset. A mistake of the kind alluded to, is a most serious one to the new settler. Besides the waste of time and money it occasions, it tends to discourage him, and seldom does he fully recover from the disaster.

The emigrant should not be in too great a hurry to get settled. Although it is desirable that he get a home as early as practicable, and begin his arduous labors, it is poor policy to purchase without much consideration. It is of the very highest importance that he SEE THE LAND BEFORE PURCHASING IT. On this point we cannot be too

urgent. As a general rule, it is utterly unsafe to buy land on the strength of a glowing advertisement, or the representations of ordinary land-agents. There are most honorable exceptions to this rule, of course, but they are few. We repeat, *buy no land until you have seen and carefully examined it.*

Before giving a few hints, which the purchaser will find useful in deciding upon the quality of land, it may be well to notice a few points which should claim his attention. In "The Emigrant's True Guide," we took occasion to discuss this at some length; but as that book may not have fallen into the hands of the reader, we will again briefly refer to it.

The very first inquiry should be concerning the *healthfulness* of the proposed purchase. If it be in a notoriously unhealthy region, utterly refuse to have anything to do with it. Of what avail will be rich land, abundant harvests, numerous flocks and herds, if, with them all, there is a constant liability to bilious and other diseases, which prevail in certain localities? A bare subsistence, with ruddy health, is far preferable; and this the emigrant will learn by sad experience, if he sit himself down beside some sluggish stream, or on some fever-breeding marsh. See to it, that the general character of the country for health is reasonably good, and that the streams in the neighborhood are clear and lively. It cannot be expected that the new and rich regions of the West will be as healthful as the poorer and better settled ones of the East; but with tolerable caution, a pretty healthy location may be made. At all events, there is a choice, and the settler should be careful to make it.

It is also extremely desirable that the settler make his location as near a good market as possible. There will be less difficulty on this point than a stranger in the country might suppose. The numerous rivers, lakes,

and canals which are to be found in the various places to which the purchaser's attention will be likely to be directed, render access to markets tolerably convenient. In those portions of the country which furnish good sleighing (sledding, as it is called in England,) in the winter, as in the most northern States and Canada, he will be pretty sure of finding a tolerably convenient market, wherever he may settle. The winter sleighing is a valuable accommodation, counterbalancing the inconvenience of bad summer roads. During the three or four months in which the snow lies on the ground, the settler is furnished with a beautiful natural turnpike, better than any macadamized road in the world; and this occurs at a season when he has abundant leisure to take his produce to market, and to visit his friends at a distance. A merry matter is this sleighing, to say nothing of its usefulness. With the bracing cold of a settled winter, a clear blue sky, and the face of the ground covered with a mantle of the purest white, the settlers enjoy their heaven-made turnpike with great zest. The cheerful bells resound through forest and field, and the once dreaded winter is rather desired than disliked. But to return from this digression.

It is important, also, in making choice of a location, to have an eye to the convenience of churches, schools, medical men, a post-office, and the like. All these things are very desirable, and to secure them it were better to take up with a less quantity of land, or that of a poorer quality. Let the settler make particular inquiries on these points. It will not be difficult to find locations with all these advantages; but as land may be offered where they do not exist, it is well that proper inquiries be made. The reader should not take it for granted, that they are to be found in every place to which his attention may be directed.

The convenience of a *grist-mill* should not be overlooked. We have known of very great hardships endured in some regions, from the want of means of getting bread-stuffs properly ground. It will be well to make particular inquiries on this point before purchasing.

In short, let the settler consider the various conveniences which will render his life, and that of his children, comfortable; and in the outset secure as many of them as he can. It is far better to buy a small quantity of land with good advantages, than a large quantity without them. Your children will need instruction, and you should not place yourself beyond the reach of schools, or the prospect of schools at an early day; the time of sickness will come, and you will want medical attendance; the hour of mourning and serious reflection may arrive, and the consolations of religion from the lips of the Christian minister will be truly welcome. See, therefore, that there be a reasonable prospect of having all these things at no distant day in your new home. It is hard enough to bear the burdens of the pioneer settler, even under the best of circumstances. Be careful to get all the comforts you can at first.

The *quality* of wild land may be judged of by the following general rules.

In the New-England States, in the State of New-York, the principal part of Ohio and Michigan, in Canada, and indeed throughout the northerly portions of America, land which is *timbered* should have growing upon it tall and strong *hard* timber, such as maple, elm, beach, bass-wood, cherry, hickory, white-ash, butternut, and the like. If the land on which any of these kinds of timber is found, be dry, (as it usually is,) it is good. The trees should, as a general rule, be tall, and branching only near the top. A large hemlock occasionally among the timber, is no

bad sign. Land which bears the timber, we have now named, or some kinds of it, is sure to be good.

If the trees be low in size, and scraggy, the soil is clayey and cold, and inclined to be too wet for cultivation. The trees which grow on wet and swampy lands are the oak, pine, hemlock, tamarack, black-ash and cedar; but the pine and hemlock are often found on dry soil, and so is the oak.

Some people judge by *the surface* of the land also. This is not always a safe criterion. If the land appears uneven, rising into little knolls or knobs, they reject it, thinking that the knolls are caused by rocks and large stones beneath the surface. This is not right. In Canada and various portions of the States, the old settlers do not reject a piece of land because of its uneven surface. Quite the contrary; for they know that the more uneven the land appears with these small heights and hollows, the better the soil probably is. We have known really sagacious purchasers to take a small iron rod, a ramrod for instance, into the woods with them, and run the rod into the knobs and knolls, to ascertain what they were composed of. This is a good plan. The end of the rod should be sharpened. By this means you can tell whether the *subsoil* be clayey or the reverse, which you could not otherwise so readily determine, as the *top* of all soils is usually covered with the black mould of decayed vegetable matter.

A lot of land should not be rejected, if a corner of it, even fifteen acres, is covered with black-ash, pine, or cedar. For fencing the cleared fields, black-ash and cedar are invaluable. For boards and shingles, the pine is of great value.

The quality of prairie land is so easily known by the eye, and is so universally good, that but few words need be said on the subject. It should be dry, clear land, of a deep rich soil, and as near as possible to timber-land; say

from one to three miles distant, or nearer, if practicable. It is of importance that you get within a reasonable distance of a supply of timber; it is of much less importance, however, than it was before the introduction of the *Pise* mode of building houses and fences, an account of which may be found in another chapter.

It is of great importance that the settler do not purchase *too much* land; especially if he take it on credit. On this point we cannot be too urgent. Many is the man who has been ruined by not being careful in this particular. Land-holders and land-agents are too apt to induce the purchaser to buy too freely; especially if the latter make a pretty good down-payment. An instance in point occurs to the writer.

A man once came into the land-office of which the writer then had charge, to "take up" a piece of land, as it is called. He was considerably advanced in life, say past fifty; and bore marks of having done much hard work, and of having passed through many trials. "I have come, sir," said he, "to take up a piece of land. Though I am almost an old man, I am going to begin life again. I am poor, and have a large family, but we are all willing to work."

"Happy, happy to see you," said the land agent, in somewhat of a cheering, earnest way; "you are just the kind of settlers we want. Our land is good, and there's plenty of it; and the more children you have, the better off you are. But why are you so poor? You say you are willing to work."

"Why, sir," he replied, "I have had a great deal of sickness in my family, that is one reason; but the principal one is, that I took up too much land when I made a beginning. The landholder, knowing I was a hearty man, and that I had a little money to pay down, prevailed on me to take up three hundred acres, when I should have

taken but sixty or seventy. The consequence was, that after working hard upon it for a few years, clearing some fifty or sixty acres, and making other improvements, I found I could not support my family, keep down the interest of what was due, and make the regular payments on the purchase. I was discouraged. The landholder might take away all I had whenever he should choose; indeed, I was literally his bondman. I felt that I might be taken sick or die at any time, and leave my family in distress. I have, therefore, sold out my betterments, and am now ready to begin again."

Here was a man, who had worked hard and eaten the bread of carefulness, but whose ill success was occasioned solely by having taken up too large a farm at the outset.

It is usually the custom, for private landholders to require one-fourth or one-fifth of the purchase money down, and the balance in four or five equal annual payments; the interest on the amount due to be paid every year. In the early history of a settler, it will not be easy to get ready money; and it will make a very great difference whether he has to pay the interest on three hundred acres, or on seventy. Besides this, a small farm well cultivated is better than a large one poorly tilled. A man can do but about a given amount of work, and he had better bestow all he can on a moderate sized farm. We have had the very best opportunities of understanding this subject, and we earnestly advise the reader to be moderate in his purchase of land. In all our experience, we have scarcely ever found an individual who could manage to pay for and clear over a hundred acres; the majority are not safe in contracting for more, nor, indeed, for so much.

Some landholders are sufficiently mindful of the interests of their settlers, to reserve small pieces of land, thirty to fifty acres perhaps, in the rear or by the side of the first purchase; and, after a little time, both parties can

see whether it is prudent to enlarge the farm. By this means the settler is not encumbered with too much land, nor disheartened by large interest-money. It is true, that the landholder's interest account is not so large as it otherwise might be ; but in the first stages of a settlement, it is of far greater importance to have the *settlers* succeed, than it is to have the land-owner's interest account large. The sooner the settlers get deeds of their land, the better for all parties.

Having entered into contract for such a quantity of land as you have reason to believe you can pay for, *have it surveyed*. Do not omit this. You will thus avoid any trouble that might otherwise occur.

If your land be *timbered*, in the State of New-York or Pennsylvania, Maine, Ohio, some parts of Michigan, and so forth, the following articles will be required to do justice to your clearing. The estimate is made for Jefferson county, in the State of New-York, and will vary somewhat, though not very materially, in other places.

ARTICLES NECESSARY FOR A NEW SETTLER.

One span of horses, say.....	\$100 00
One yoke of oxen.....	50 00
One double wagon.....	50 00
One superior plough.....	10 00
One drag.....	5 00
One spade, shovel, and hoe.....	2 50
Two log chains.....	8 00
One cradle, scythe, and snath.....	7 00
One axe.....	2 00
Two augers—half-inch and inch.....	1 00
One saw.....	1 00
Two chisels.....	75
Rake and pitchfork.....	1 00
One hammer and 10 lbs. of nails.....	1 25
One cow.....	15 00

\$254 50

The average price of clearing land in the may be set down at about ten dollars the the common Virginia fence, which is a v for a new country. Persons can always will contract at this price.

The next thing to be done, is to build some dwelling. The *log shanty* is usually the first builds. It is an exceedingly comfortable dw in summer and warm in winter; and if w every year, and clambering vines made to r is a very pretty one. It is speedily built, a sary, the settler can build it all himself. In tion of this book, full instructions will be manner of building shanties, log-houses, barns, fences, and the like. By turning to contents, the reader will find where to look formation.

Having got up a shanty or a log-house, the next step will be that of clearing. The emigrant will now be disheartened, perhaps. It will seem a long and dreary work to lay the giant forest low, and make of the wild land, fruitful fields. But as he proceeds, he will find it less difficult than he had supposed. After the lapse of two or three years, order will begin to reign, and he will be more than satisfied.

In CLEARING, the first thing is to lay out in as regular a shape as possible, the land designed to be cleared the first season. A portion of this, say one or two acres, should now be *underbrushed*, that is, the small growth of wood and bushes all cut up. If there are any old logs or trees lying on the piece to be cleared, cut them up into fifteen-feet lengths. Having thus made clean work of the underwood, go to work, and cut down all the trees, clean as you go, with the exception of the rail-timber which may be growing on it, such as black and white-

such other woods as the country fur-
ll this should be saved, and cut down
 of.

Trees are usually cut down at that dis-
 tance and which is most convenient for the
 use of the axe—say about breast-high.

After the trees, the next step is to cut them
 into a size convenient to be drawn into piles for
 use. These logs should be about fifteen feet in
 length and six or eight feet in diameter. Go on with this till all the trees
 to be cut down are chopped into logs.*

Now look your eye around, and see where the heaviest
 brush should be in tolerably convenient spots,
 to be the centres of different piles. Now, with
 the help of the log-chains, draw the logs to these piles.

After logging. Now pile up the brush into
 heaps for burning. The log-heaps may be made
 as small as a dry time; if not, they must be large.

No particular instructions can be given on this point; the
 settler must be guided by his own judgment, and by the
 example of others. The logs and brush thus piled, take
 occasion of the first dry time to set fire to them. They
 will soon consume, if the weather be at all favorable.
 The appearance of a new country by night, when this is
 going on, is exceedingly picturesque and beautiful. The
 fires light up the surrounding forest with great brilliancy;
 and one fancies that he is walking amid the aisles of

* The above is the common way followed in chopping. There is another, and that is in "*windrows*," which is, by chopping all the trees down, so as the tops are thrown together, in a row or strip, the trees being so chopped down, as to cause the brush to lie together, in a row, which not being cut, (unless some high branches, which lie not close) saves trouble in cutting the branches off and piling them. This plan is not often followed, however. There is another way also, and that is to make jam heaps, by throwing as many of the tops of the trees together as possible, making thus a large brush-heap. This is not a bad plan, if the season is a dry one, as these heaps burn off many of the upper and thick branches or limbs of the trees, which would otherwise need to be cut by the axe, and logged or hauled together.

some gorgeous, though unearthly temple forest leaves there be the drops of a passion of the dew, they glitter in the brilliant light diamonds.

And even by day these clearings have a beautiful and interesting appearance. When the air is clear and the blue column of smoke rises like a tall fairy shaft, up to the heavens, contrasting with their deeper blue; it seems as if it were a monument of praise to the noble pioneers who are thus willing to bear the heat and burden of the day. Though it be a digression from the practical work we have in hand, and the critic may deem it an offence against good taste, we must be allowed to say, that in the rude forest life of which we treat, there is much of real romance. Often have we enjoyed it, with a joy not equalled by that experienced in other scenes. Look at the forester, on the Sabbath, if you please. He has well kept the command, "*six days shalt thou labor,*" and he rises to enjoy the day of rest, deeming it indeed a blessing. The church-going bell is not heard within his wild domain, nor organ, nor anthem, nor choir. But there is music in the deep silence. He wanders a little way from his dwelling, and sits him down beneath the verdant canopy of leaves. Up above all, through the fretted roof of branches, he sees the deep blue of the heaven of worlds, emblem of the divine purity. He hears a sound—'tis but the clear trill of the Phebe-bird, perhaps, or the rich love-note of the robin. The leaves tremble in the light breeze, with a voice sweeter and softer than the tones of the wind-harp:

"Unearthly minstrelsy! then only heard,
When the soul seeks to hear; when all is hushed,
And the heart listens."

The forester is, indeed, in a temple not made with hands, and his worship may be paid to Him who seeth in secret, and rewardeth openly.

our soberer work.

Clearing by *slashing*, as it is termed, is by all means avoid it. *Girdling* trees, of themselves, and after they have fallen, is another poor way of clearing. It is, however, in many places, and has its advocates.

Having burnt the logs and brush on the land, the ashes that remain should be made into "*Black Salts*," (if there be a good quantity.) By turning to the article entitled "*Black Salts*," the reader will learn the process. An acre of well timbered land will furnish from seventy-five to one hundred and fifty bushels of ashes. Every four hundred bushels of ashes will make a ton of potash or pearlash.

The land should now be fenced into ten-acre lots, with a fence seven rails in height. The article, "*Fences*," in this book, will give the necessary information on this point.

When the land is fenced, it is ready for sowing. In September, sow one and a quarter (or half) bushels of wheat to the acre. "*Drag*" it in with the harrow, and *cross-drag* it, so as to be sure that it is well covered. A good workman will take a peck-axe, and peck the land around the stumps, and see that it is thoroughly seeded. The land is now in a fair way to yield a good crop the next season. Early in the following spring, sow on the same land, in among the wheat, four quarts of grass seed, either herds'-grass or timothy, to the acre. After the wheat is harvested, this grass will become meadow, in which state it should lie till the roots of the stumps shall have rotted, so as to enable you to plough the land, which will be in about five years.

We have thus traced the process of clearing, sowing, and grass-seeding a piece of land. The first spring and

summer it is cleared; in the fall wheat is sown; the next spring it is put into grass, and the second year a crop of wheat is taken from it, leaving it in grass.

This process is continued from year to year until the whole farm is brought under cultivation.

In a year or two the stumps that remain should be set fire to, in a dry time in autumn, to hasten their decay. If any young twigs shoot out from them, cut them off at once. Keep everything tidy; the fences in good order, and the greensward from being too much trampled on, either by man or beast.

Mr. Widder, the gentlemanly commissioner of the Canada Company, in Toronto, has politely furnished us with the following estimate of the first three years outlay and income of a settler in Canada West. It will be valuable for those removing to that beautiful province:

Cost of clearing 10 acres of heavy timbered land, in the usual Canadian fashion, with an estimate of the crops to be produced therefrom during the first three years after clearing:

FIRST YEAR.

DR.

	£	s.	d.	£	s.	d.
Chopping, clearing, and fencing 10 acres, so as to leave it fit for the drag, at £4 per acre.....				40	0	0
Seed, 1½ bushels wheat to the acre, say 15 bushels, at 5s.....				3	15	0
Sowing and dragging, at 5s. per acre.....				2	10	0
Harvesting, at 7s. 6d. per acre.....				3	15	0
The value of the straw, tailing, wheat hulls, etc. on the farm, are supposed to be equal to the threshing and cartage to the barn.						
To timothy and clover seed, at 2s. 6d. per acre,				3	5	0

CR.

By 20 bushels wheat per acre—260 bushels, at 3s. 9d.....	37	10	0
--	----	----	---

THE FARMER'S AND

SECOND YEAR.

DR.

	£	s.	d.	£	s.	d.
ing off hay, at 7s. 6d. per				3	15	0

CR.

By 1½ acre of hay, at 6 dollars per ton...	22	10	0
--	----	----	---

THIRD YEAR.

DR.

To mowing and taking off the hay, at 7s. 6d. per acre.....				3	15	0
---	--	--	--	---	----	---

CR.

By 1½ ton per acre of hay, at 6 dollars per ton,	22	10	0
--	----	----	---

	<u>82</u>	<u>10</u>	<u>0</u>	<u>60</u>	<u>15</u>	<u>0</u>
Balance in clear profit..				21	15	0
	<u>£82</u>	<u>10</u>	<u>0</u>	<u>82</u>	<u>10</u>	<u>0</u>

Do not stir me

1855

CHAPTER II.

PRAIRIE FARMING.

IN the previous chapter, we have traced, as best we could, the earlier stages of a settler on the timbered lands of the Northern States and Canada. Let us now turn our attention to *prairie farming*, in its beginning, and in a small way.

For much of the material of which this chapter is composed, we are indebted to that most capital writer, SOLON ROBINSON, of Indiana. Our own observations had not been much directed to prairie lands, and prairie modes of farming; but the great experience and really able pen of Mr. Robinson, have abundantly supplied what we lacked.

We shall use much of Mr. Robinson's language for a few pages.

It will be observed, that the advice in this chapter is intended for the emigrant of very moderate means. Those of larger means will find valuable hints in other portions of this book. By turning to the article entitled "*Prairie Miscellany*," they may be found.

Such articles as you wish to have in your new home, you will pack up in boxes or barrels, (the latter the best,) strongly hooped and plainly directed, and ship to the nearest port of your intended location. The best month

to start is June. Such articles of furniture as chairs, tables, bedsteads, bureaus, stoves, and other bulky articles, you had better sell than ship—particularly if your new home will be in the country within reach of water-carriage; for at most lake towns, such articles can be bought at reasonable prices. So can ploughs, at prices from \$6 to \$15—wagons, \$60 to \$80—double harness, \$14 to \$20—log-chains, 10 to 12 cts. a pound—scythe and snath, \$1 50—rakes, 18 cts.—pitchforks, 50 to 75 cts.—shovels and spades, 75 cts. to \$1 50—axes, \$1 00 to \$1 50—hoes, 37 to 75 cts.; and other farming tools in proportion.

The emigrant should not pay freight on horses and cattle, or upon hogs and sheep; for his team he can buy in the West cheaper than he can at the East, and improved stock he does not want to begin with. Beds and bedding he should never sell, and he may as well take an extra stock of clothing of all kinds, except “finery;” a snug little bookcase well filled; together with “Town’s Spelling Book,” and “Webster’s Dictionary;” a slate for each of the children, and a receipt for the subscription of at least two agricultural and miscellaneous papers for two years;* and thus equipped, he will be prepared to begin life in the West.

Having arrived, we will suppose you possessed of your team, and a few of the most necessary farming tools, household furniture, and just money enough “to keep the wolf away from the door;” with a part of this you must purchase a cow and some provisions to begin with, and of course rent an improved place for a year or two, which you can do for a third of the crop, or for about one dollar an acre for the tillable land. After putting in a crop of wheat the first fall, you will find employment for your-

* The “New World,” of course.

self and team during the winter. And upon the prairie soil, you would soon grow rich raising wheat, even at 50 cts. a bushel, if it were a certain crop; but as we are intending to write truth, we must say that we do not think it is. It is liable to winter-kill by heaving, and to rust; and this year, (1844,) some early wheat is injured by the frost of May 21st, and the Hessian fly has made its appearance in the West, besides another danger in the shape of the "army worm." Spring wheat, buckwheat, oats, barley, potatoes, turnips, peas, grass, and garden vegetables generally, may be counted upon as certain and good crops. Cattle and sheep fatten and winter well upon prairie hay, and cows are profitable for butter and cheese. The prices of good common farm horses, say in Illinois and Indiana, is about \$50 to \$60; four-year-old working oxen, \$35 a yoke; cows, \$8 to \$12; yearlings, \$3 to \$4; two-year-old, \$6 to \$7; sheep, \$1 to \$1 25; hogs plenty and cheap.

Again, we will suppose you arrive with \$200, exclusive of the other necessaries above mentioned. A small capital, you say, with which to buy a new farm, and commence farming in a new country. True; but many a man in the West is now comparatively rich, who commenced with a less sum. All that is wanted is courage and industry—some would say luck, but luck almost always follows industry. Well, you wish to know how to begin in this small way. We will tell you. United States public land is \$1 25 an acre, and thousands of acres are subject to entry upon all the western prairies, of a most excellent soil. You arrive the first of July, and are determined to become an owner of the land you cultivate. You find a region of country, the appearance of which suits you. First get your family temporarily into some vacant house, and then try to buy a small improved place

within your means, which you can often do, as all new countries are first improved by an uneasy, roving class, ever ready to "sell out" and go to some other part of the country, "a little farther west," or perhaps "begin a new place" in the same neighborhood, and which in turn will be again for sale. In fact, this is the common way of settling a new country. So you need not be surprised to find the whole population ready to sell their new home before a long residence attaches them to it. The "selling out fever" is a mania, but a very harmless one; you need not fear it. But if you cannot buy an old place, then you must make a new one. "What!" you exclaim, "buy land, build a house, fence and plough a farm, with \$200? Pray, tell me how." We will.

First, then, you cannot buy less than forty acres of public land. Let this be dry, clean prairie, which will be perhaps from one to three miles from timber. This will cost \$50, besides a little expense of going to the land-office, which in some districts may be a hundred miles. Now, you must have some timber land. The price of this will vary in different sections of the country, it being in the hands of private individuals generally; but where timber is plenty enough to make it advisable to settle, it can be bought for \$5 an acre. Five acres of good white oak timber, will be sufficient for the forty acres of prairie, and will take up \$25 more of the capital.

Now for a house. Forty logs, eighteen feet long, ten inches diameter, slightly hewed on two sides, notched or hewed together at the corners, will form the walls. Seven smaller sticks, hewed on one side, will make the sleepers of the floor, and the same number for the joists of the chamber floor; as ten logs high will allow of having a low chamber that will answer for beds. The rafters can be made of straight rails, and may be boarded and

shingled, or, with less expense, have smaller rails nailed on for ribs, and covered with split clap-boards or strakes, three feet long and six inches wide: four hundred will make the roof, and they are worth, if bought, not over \$2 50. The gable-end may be studded and sided up with logs—the boarding is preferable. A front and back door, and two twelve light 8x10 glass windows, are to be cut out of the logs, and a space for the chimney, the whole of which will be built on the outside to save room. The ends of the logs, when cut off, are secured in their places by a board or piece of split stuff, pinned or nailed on.

If the country is new, and destitute of brick or stone for a chimney, yet one must be built. This is done by first making a rough frame of split stuff, on the outside of the fire-place, which is to remain; and on the inside a temporary frame of boards is put up, just the size of the contemplated fire-place. Then this space is rammed full of slightly moistened clay, and a wooden mantle laid across, and the funnel of the chimney built out with sticks and clay; then the inside boarding of the fire-place is taken out, and the hearth made of pounded clay, and it is ready for use, and will last many years.

If in a country of saw-mills, you will procure boards for the floors and doors, otherwise they must be made of split stuff.

The spaces between the logs are filled with "chinking," that is, pieces of rails, and blocks, and split stuff, and then the whole well "daubed" with clay mortar in all the cracks, outside and in. A small shed should be built over the back-door, to keep the pots and kettles dry. This house can be built, finished, and ready to move into, for the following expense:

Cutting, hewing, and hauling timber.....	4 days' work.
Raising, (mostly done by neighbors) say.....	1 do.
Putting on roof and gable-ends.....	2 do.
Cutting out doors, windows, and place for fire-place, and casing doors and windows, and making doors....	4 do.
Laying floors and making a ladder to chamber.....	3 do.
Chinking and daubing.....	3 do.
Building chimney.....	3 do.

In all.....20 days.

Now, the cash out will be, for ten days' work hired.....	\$5
1000 ft. of lumber for floors, etc.....	10
20 lbs. of nails.....	1
30 lights sash and glass, (1 six light for chamber).....	1 87
2 pair butts and screws, (use wooden latches)	25
400 split clapboards for the roof.....	2 50

Total.....\$20 62

But we will add for contingencies, which will make even money, 4 38

Making.....\$25 00

Some of the packing-boxes, in which come your things, with the lid hinged with bits of leather, and some shelves put in, will make some good closets for a corner of the "new house"—and if you have a jack-plane and augers, which every emigrant should have, you can make some coarse bedsteads, upon which you will sleep more soundly, and a table or two, upon which you will eat with a better appetite, than those do who eat from a table that costs more than yours, house and all.

We have allowed ten days after you have fixed upon your location, to build your house and move into it; but it would be better to have more hands, and complete it in less time. In the meantime, if not too late in the season (which should not be later at any rate than the middle of August,) you may hire twenty acres of prairie broken up

which will cost from \$1 50 to \$2 an acre, owing to the different prices of labor in different parts of the country, rather than to a difference in the quality of the breaking; though the best of it cannot be done to good advantage with less than three stout yoke of oxen, and generally four yoke are used—so that it is generally better for the poor settler to hire his breaking done by the acre, than to attempt it with an inefficient team. The depth of breaking varies from two to eight inches; and it is still a mooted point what depth is the best—our own opinion is four inches.

The breaking of this twenty acres, put down at \$30—and fifteen bushels of wheat with which to sow ten acres, at 50 cents a bushel, \$7 50. This will take about a week to put in as it should be, for the sod is very hard, and needs a great deal of harrowing; and as you have been on the prairie so short a time, that you have not been able to get a harrow of your own, we will excuse you for borrowing one—though an eternal borrower is but little better than a thief in a neighborhood.

Having sowed the wheat, you have necessarily to trust it to Providence, unfenced, as you cannot fence it at present, and we have known many a first rate crop raised in the same way, even in thick settled neighborhoods.

Your next step is to cut a good supply of hay for the cow and team for a five months' winter. And then a temporary stable you can build in this manner: Lay up a pen of rails double, that is, two courses all round, except a door-way at one corner, where the ends of the rails are secured in their places by short cross ties, and fill in the space between the two courses of rails—which should be at least a foot—with wet hay, and dirt, and sods, and trash, that will make a perfect tight, warm wall; and over the top lay poles, and build a small stack of hay of the coarsest grass, which will shed rain and serve you for a good sta-

ble a couple of years. There should, however, be a little ditch dug around the outside to take off the water; the dirt being thrown inside will raise the ground, so as always to keep a dry and better floor than a plank one.

All this, you see, is done with your own labor, or by exchanging a day or two of work with a neighbor.

You will, of course, extend the size or number of the pens, to suit the number of animals to be stabled, and also an extra room to hold the harness, grain, tools, etc. etc.

You will see the necessity, also, of putting up as soon as possible, a small room adjoining the house, which may be made of straight rails and covered with strakes; all of which can be done with three days' work, and will serve for a very good store-room for flour, meal, meat, potatoes, etc., except the latter, which must be holed up for winter; a few bushels, however, can be kept under the floor next the hearth, for daily use during cold weather, and in some winters they will keep in a bag in the same room where you live.

We have now brought you, step by step, into winter-quarters. You will observe that we have used up \$137 50 of your \$200 cash capital, and as it is desirable that you keep entirely free of debt, we will leave the balance for your support until your land produces something for you, and right well must you husband it. Perhaps you had better give the purse to your wife, for if she is the right sort of a woman, she will housewife it better than you will husband it—and above all things, don't let a soul know how much money you have got; and as you pay cash for everything you buy, people will imagine that you have an abundance, and will practice upon the principle that to him that has, more shall be given, and from him that has not, or but little, that little shall be taken away.

You will now proceed to fence the twenty acres you have broken up. Counting two panels of ten-foot rails to the rod, which is hardly crooked enough, but will answer, it will take four thousand eight hundred—say five thousand rails and stakes; and an addition of sixteen hundred more will fence the whole forty acres, making six thousand four hundred; and about six hundred more for the necessary yards around the house and stable, making seven thousand in all—which if you will get out in the course of the winter, and get up a good supply of wood, besides your other necessary work, you may be set down for an industrious man. But by exchanging your team work for manual labor, you can accomplish it, so that the spring finds you in possession of forty acres of prairie land, well fenced, ten of it in wheat and ten ready for a spring crop, a comfortable dwelling, and stable and yards, etc. Now let us proceed. It is possible your wheat is winter killed—then sow the whole with spring wheat, and harrow it in as early as possible—but if not killed, then sow two acres of the other ten, in spring wheat; seven in oats, and the other acre for a “truck patch,”—the spot intended for a garden, being planted in potatoes this year, as best calculated to mellow the ground.

Previous to the tenth of June, get two more acres broke up and sow it in buckwheat; and if you find yourself able, get eight acres more broken up for wheat this year, not more. Do not undertake too much, remember that; but keep doing, and in time you will accomplish wonders.

This fall you will be able to plough the old ground for a spring crop of wheat, oats and corn. Put all the manure on the garden spot. Cut more hay, and get a few calves, and half a-dozen sheep, and in time you will have a large stock, and a large farm, and build a new

house, and be very glad to have us call in some winter evening, and talk over all these scenes of the new settlement on the Western prairie.

In the foregoing remarks, we have spoken altogether of the use of a horse-team, while, at the same time, we would recommend to the emigrants who arrive without a team, to buy oxen in preference, as being the cheapest at first cost, and altogether the most economical, for the man of small means. So, also, we would recommend, if you go on with a horse-team, and little money, that the horses be sold, and a yoke or two of oxen furnished. The average price we have previously stated. You see that we do not recommend much Indian corn for the first crop, because it is difficult planting—that being done by cutting a hole through the sod, and it admitting of little or no after culture, the crop is light, seldom reaching twenty bushels to the acre—in Indiana.) Neither is it profitable to sow grass seed, until after the sod is well rotted.

We have now only spoken of a cheap log-cabin and the cost. Estimates of the cost of other houses are elsewhere given.

The wealthy class of emigrants will always find plenty of improved farms for sale, cheaper than they can make the improvements. We have given the reason, the restless disposition of all pioneers in a new country. And this restless disposition is not altogether acquired here. The emigrants bring it with them; and when they arrive in a really good country, they are not satisfied to settle down, lest there might be a better place a little farther toward the setting sun; and like that, they are ever rolling westward. The Pacific Ocean will perhaps prove a barrier—nothing short of it: for it is already proven, that the great wilderness and prairies between this and that, are insufficient to stop the onward rolling wave.

In the foregoing estimate we have omitted the cost of a *well*, which is one of the most important items in the comfort of a family. The average depth of wells on the prairies is about twenty-five feet; and the cost may be set down, for one properly bricked up and curbed, at about one dollar the foot. Some persons use the water from streams and ponds, but it is not a good plan. The sooner the settler gets a well the better. Rain-water, perfectly filtered, is healthy and agreeable.

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CHAPTER III.

ON THE GENERAL MANAGEMENT OF A FARM.

THE following article from the pen of a distinguished farmer of central New-York, is admirably calculated for the study of a farmer of moderate means. It is written in a simple, clear style, and may be depended on for its accuracy. We copy it from the published transactions of the New-York State Agricultural Society for 1843.

In writing on this subject, we shall divide it in the following order :

Firstly—What proportion of the farm it is proper to preserve uncleared of wood.

Secondly—The proper division of the cleared land into fields, size of fields, manner of fencing, etc.

Thirdly—The proper improvement of the soil, which will include draining, manuring, etc.

Fourthly—The cultivation of various kinds of crops.

Fifthly—Seeding of land with grass seeds.

Sixthly—Raising domestic animals.

Seventhly—Necessity of barns and sheds sufficient to store all crops, and protect domestic animals from the inclemency of the weather.

FIRSTLY—*What proportion of the farm it is proper to preserve uncleared of wood.*

This will depend some on the number of fires which must be supported ; more on the kinds of timber which

grow on the land, but mostly on the materials used for fencing. For if but one fire is needed, the growth of wood on a small number of acres will be sufficient to supply the requisite quantity of fuel ; so also if the timber is of a durable kind, a much less quantity will be sufficient to keep the fences in repair than would otherwise be needed. The location of the farm should also be considered, for if it is located in the immediate vicinity of a good market for wood, economy could dictate that a larger proportion of woodland would be profitable than under other circumstances. If portions of the farm are unsuited to tillage, it may be profitable to allow such portions to remain in wood. But where all land is suitable for tillage, where the materials for fencing are not very perishable in their nature, and but one fire is generally needed, a proportion of 15 or 20 per cent. in quantity on a farm containing from 100 to 200 acres, is sufficient to remain in timber.

SECONDLY—The proper division of the cleared land into fields, the materials out of which those divisions are made, and the manner of making them.

The size of the fields should depend much on the size of the farm, the purposes for which the fields will generally be used, and the expense of fencing ; but we believe that little danger need be apprehended from the two small size of fields, especially for pasturage.

The shape of the fields, for obvious reasons, should be as near square as the surface and places for watering will permit ; and if any field or portion of a field should be too wet for tillage, let it be drained according to directions which will be hereafter given.

The materials for fences will depend much on circumstances. Where stones of suitable size and shape can be

obtained cheaply, and within a reasonable distance, they are undoubtedly the best, and ultimately the cheapest, material out of which a fence can be constructed. Next to stones, a fence of cedar posts and hemlock boards is to be preferred, because it is durable, neat in appearance, occupies but little ground, and is easily kept free from weeds. But where stones, or posts and boards cannot be easily obtained, and where chestnut and oak rails are abundant, and the land cheap, a worm-fence made of these is quite durable, and perhaps next to be preferred. Nothing but imperious necessity will cause us to build a worm-fence of bass-wood rails; we believe that ultimately they are the most expensive materials commonly used for fencing. We have not noticed hedges, for we believe it is not yet satisfactorily settled, whether a material has been found which is suitable and durable in this latitude; and if such material had been found, we doubt whether it would be extensively used, on account of the frequent alteration of lines and divisions of farms in this country. But of whatever materials the fence is made, or however constructed, passes should be left for the team and wagon from the highway to each field, and from each field to the one adjoining; so that in no case shall it be necessary to do more than to open the gate, or take out the bars, in passing from one field to another.

THIRDLY—*The proper improvement of the soil, including draining, manuring, etc.*

When a due proportion of the farm is cleared of wood, and suitably divided and fenced into fields, the first inquiry should be, are all of these fields in a condition suitable for tillage? If, upon examination, any field or part of a field is found not to possess the requisite degree of dryness to render it suitable for tillage crops of any kind, let

the next inquiry be, is this wetness occasioned by springs or by surface water? If the former, then carefully examine and see where it will be necessary to locate drains, to catch the water before it breaks out on the surface. If the springs are small, economize closely so as to concentrate as many springs as possible in one ditch; but if the springs are large, there may be danger of getting more water in one ditch than it will carry, unless it is made inconveniently large. In this case it may be well to make two or more main drains. If any springs exist which cannot be brought within the line of the main drain, mark a side cut from the main ditch to the spring or wet ground, and thus bring it in. Be sure to have a good draft and outlet to the main ditch.

When the work is thus laid out, begin at the outlet, and dig a ditch two and a half feet deep, as the line of the ditch is laid out. The width of the ditch must depend upon the size of the stones which will be used for filling, large stones requiring a wider ditch than smaller ones. Our practice is to cut fourteen inches broad on the surface, and the bottom sufficiently wide to permit the free use of the common farm shovel. The stones should be drawn and placed in a row along the bank of the ditch, on the side opposite the one on which the earth is thrown; the largest stones lying nearest the ditch. The filling in of stones should commence at the upper end of the ditch. After removing all loose earth, place a row of stones on each side on the bottom of the ditch, and cap with another, leaving a tunnel proportioned in size to the quantity of water which will need to flow through. A four-inch tunnel is generally sufficient. On the top, and around these cap-stones, place smaller stones until within twelve inches of the earth: place a slight sprinkling of straw on the stones to prevent the earth from falling among them, and with the plough carefully fill the ditch.

If, on examination, it is found that the wetness proceeds from water which falls upon the surface, and, in consequence of a hard retentive subsoil, remains near the surface until evaporated, it will be necessary to dig a ditch (as before described) along the lower side of the field, as a receiver for the ditches, which we are about to describe, to empty into. Then, at right angles with this, make drains (in the same manner) parallel to each other, if the surface of the ground will permit, all emptying into the first. The distance from one drain to another must depend on the subsoil. If that is very stiff, twenty feet will be proper. But, if the subsoil is more porous, the distance may be thirty feet. It is believed that a thorough use of the subsoil plough will render the subsoil so porous, that thirty feet will be sufficiently near in most cases.

In draining, *be sure to make the land dry*, and fear not the result. This may be objected to, on account of the expense; and some may think it will prove an unprofitable outlay of capital. But it should be remembered, that earth continually saturated with water is worth nothing except for grass, and that is generally small in quantity, and always poor in quality. We know a person who has had some experience in reclaiming land by draining, and, with his permission, we shall now proceed to give you a statement of facts concerning the condition of a piece of ground previous to draining; the cost of draining; the tillage it has since received, and the crops which it has produced.

The field, when the operation of draining was commenced in 1837, contained seven and a half acres, which, previous to that, had never been ploughed; was so wet as to be useless, except for pasturage; and on almost one-half of it the grass was wild, coarse water-grass, which no animal would eat, except for a short time in the

spring; the soil, a sandy loam, resting on a stratum of gravel and pebbles cemented together by clay. On many parts of this field springs broke out, which leached over the ground, mostly between the soil and subsoil, and rendered it so wet that in the early part of spring, a little exertion of a man when standing on it would shake the earth for yards around. To reclaim this field, 200 rods of stone under-drain were made, at an expense of about fifty cents per rod. The ditch was cut too wide, consequently it cost more to dig and fill it than it otherwise would. In other respects it was made according to the preceding directions.

In the spring of 1838, the field received one ploughing; four acres were sown with barley, (they should have been planted;) two acres were planted with potatoes, half an acre with corn, and one acre ploughed a second time and planted with rutabaga—all without manure. The produce of this first year was about 100 bushels of barley, 600 bushels of potatoes, 20 bushels of corn, and 600 bushels of rutabaga. In the spring of 1839 the field was once ploughed, and seven acres sown with Italian spring wheat, and the remaining half acre with Whittington wheat. The latter proved a total failure, as it proved to be a variety of winter instead of spring wheat, as was supposed. The Italian grew large, lodged badly, and shrunk; yielded 15 bushels per acre. In the spring of 1840, the field was covered with wheat straw, and then carefully ploughed and harrowed, and planted with corn, excepting three rows of potatoes around the piece. The corn produced 65 and the potatoes 250 bushels per acre. In the spring of 1841, by the alteration of an adjoining field, one-half an acre was added to this. The field was then ploughed once, and four acres sown with peas, and the other four acres with barley. The peas and barley

each yielded a trifle more than 30 bushels per acre. After they were harvested, the field received one ploughing, and was sown with winter wheat. The wheat stood well, grew finely, and promised fair for a good yield; but, like most of the wheat in this section, it was blighted with rust, and produced perhaps about 10 bushels per acre. In the month of April last, 48 quarts of clover seed, and the same quantity of timothy seed, were sown on the field. In the month of May, plaster was sown at the rate of two bushels per acre. After the wheat was harvested, a most luxuriant growth of clover and timothy covered the ground.

The above statement of facts clearly proves that in this instance, the capital which was expended in draining, was profitably used; and doubtless thousands of acres in this State might be as profitably reclaimed as were these, and thus render the country more pleasant, productive, and healthy. We consider it one of the greatest improvements of modern farming; for without it, wet land cannot be cultivated with profit, because tillage-crops cannot be obtained; consequently, a rotation of crops cannot be practiced, and clover, that great fertilizer of the earth—that which fills the fields of the farmer with fat cattle, his barns with hay, and the earth with manure—will not flourish. In short, it is the basis of all improvement of wet soils. Aside from profit, it enables the farmer to convert unpleasant looking spots on his farm into fields of surpassing beauty and loveliness; which, with the farmer of correct taste, is a consideration of importance.

We will now consider the management and application of manure.

The most fertile land will become exhausted under a continual course of cropping, unless the soil is compensated for the loss which it sustains. This is furnished

directly or indirectly in the form of manure. And some soils are naturally so barren, (or have been made so by improper management,) as to be incapable of profitable cultivation without the aid of some fertilizing agent; consequently, it becomes a subject of great importance to understand how we can make the most manure and apply it to the best advantage. We believe the manure heap may be doubled in quantity, by carefully yarding the domestic animals during the season of foddering, and making a proper use of straw to furnish them with comfortable lodging. And here permit us to say, that aside from the advantage of making and preserving manures, but for the purpose of economically keeping domestic animals in good condition, and preventing injury to the grass-roots and the earth from their treading, *no domestic animal should be allowed unnecessarily to roam from the yard after foddering commences, until the fields furnish a good bite of grass in the spring.*

But if this does not furnish sufficient manure, and perhaps too much cannot be made after the yards are cleared in the spring, draw weeds of all descriptions, cut before the seeds are sufficiently matured to vegetate, scrapings from the roadside, and muck from the swamp, (if the swamp is not to be reclaimed by draining,) and deposit them in the yard; and the quality of the mass will be much benefitted for most soils, by incorporating in it a liberal quantity of lime, the whole worked together and formed into compost. This will absorb the liquid portion of the manure made in winter, which might otherwise be lost.

We believe that spring is the best time to apply manure, when all nature is starting into renewed life and energy. We should recommend that it be applied to hoed crops, as they are the most benefitted by the direct application.

of manure, while small grain is frequently injured by it, as it causes the straw to grow too luxuriant and soft to sustain and mature the ear. To obtain the greatest benefit from manure, it should be thoroughly incorporated with the earth near the surface. But if it is applied in a coarse and unfermented state, it may be covered deeper without sustaining loss, as the gas which is generated by the decomposition of the manure rises and is absorbed by the earth above.

Another mode of improving the farm consists in mixing in due proportion the various soils where nature has not done it. A soil consisting of so large a proportion of clay as to lack a proper degree of friability, may be rendered very productive by the application of sand; and vice versa, sand will become a profitable soil by the admixture of clay. In many sections where sand predominates, beds of clay marl abound, which may be incorporated with sand to great advantage.

Another method of improving the farm consists in gradually deepening the soil by deep ploughing, which enables the growing crops to withstand wet better, for the water will sooner settle away. It also enables vegetation better to withstand drought, as the roots strike deeper and derive moisture from a greater depth than they could with friable soil of less depth. For the purpose of giving greater depth and friability to the soil, the subsoil plough is well adapted, and we think will soon come into general use.

FOURTHLY—*Cultivation of various kinds of crops.*

The best preparation for Indian corn and potatoes is a clover ley, made rich by manure. If the manure is long and unfermented, spread it on the furrow after the land has been ploughed, and incorporate it in the earth

by thorough harrowing. Plough but once, and spare no pains to do it thoroughly. Plant early; keep the crop free from weeds, by frequently stirring the soil with the cultivator and hoe, and avoid hilling, especially for corn.

For winter wheat, the best preparation which the ground can receive is a *thorough* summer-fallowing, though if the ground is free from weeds and in good state of cultivation, wheat may be profitably sown with one ploughing after peas, and, perhaps, on some soils and in certain situations, after corn. The wheat sown should be free from all foul seeds, and in quantity about two bushels per acre. Spring wheat may be successfully cultivated with once ploughing land on which corn or potatoes were raised the preceding year. Barley requires soil and treatment similar to spring wheat.

Oats require much the same treatment as spring wheat, and should be sown early to secure a good crop. Late sowing frequently produces a large growth of straw, but the berry is generally light.

In raising peas, we have been most successful when we have inverted greensward, and harrowed in three bushels of seed per acre, on the furrow, and made all smooth with the roller.

For raising beets, carrots, or rutabaga, select a sandy loam; make it rich; plough deep; plant evenly; keep the ground free from weeds by frequent hoeing, and do not suffer the plants to stand too thick. Follow these directions, and an abundant crop will be very sure to crown your labors.

FIFTHLY—*Seeding land with grass seeds.*

This subject deserves greater attention from the farming community than it has generally received. Owing to a lack of proper seeding, large quantities of land are

annually left a barren waste, or, what is worse, produce large quantities of noxious weeds, which are allowed to perfect their seeds, and these are wafted on the wings of the wind in every direction, blasting the hopes and destroying the expectations which the more prudent and economical farmer had entertained, that he should be able to eradicate and keep clear from his land pestiferous plants. Oh! that man would learn to do to others as he would have them to do by him in similar circumstances. We deem it of the utmost importance that all land should be properly seeded with grass seeds, whenever it is to be suffered to remain uncultivated with grain. This not only helps to keep the land free of weeds, but it furnishes food for domestic animals, tends greatly to keep the land fertile, and renders it more easy of cultivation when needed. The kind of seeds used must depend somewhat on the condition of the soil. But if this is sufficiently dry to permit a rotation of crops, which we think it should be, we know of none better than red-clover and herds'-grass. The quantity we would recommend is twelve quarts per acre, equal parts of each by measure.

The best time for sowing on winter grain, is on some of the last snows of spring. If sown too early, it may vegetate before the severe frosts of spring are all past, and if it does, they are liable to destroy the young plants. If the grass seeds are to be sown with spring grain, first sow the grain and harrow once over, then sow the grass seeds, harrow lightly and make all smooth with the roller. In the month of May, sow two bushels of plaster per acre, to preserve the young plants from the effects of drought. If it is intended for pasturing, sow plaster on it the next spring; but if it is intended for mowing, omit the second dressing of plaster, for it is very liable to cause the clover to grow too rank, to fall and become

mouldy ; which injures the quality of the grass, and greatly increases the labor of cutting. Let the motto of the farmer be to plough often, and seed often and plentifully with grass seeds.

SIXTHLY—*Raising Domestic Animals.*

1. In preparing to raise domestic animals, the first thing to be considered is the use for which they are intended. No prudent, well-informed man, would think of raising a racer from the French horse of Canada, or a plough-horse from the light racer of the south ; a fine woolled sheep from a Cotswold, or a heavy mutton-sheep from a fine Saxony ; a pig that should fatten young from a land pike, or one which would attain great weight from the Chinese breed. We have different breeds, and these are adapted to different purposes.

After having selected that breed of the different kinds of domestic animals which he thinks best adapted to the purpose for which he wishes to rear, he should endeavor to obtain good animals to breed from. These he should never suffer to deteriorate, but should endeavor, by carefully preserving the best animals for breeders, to improve on his stock. In order to do this, it is necessary to feed well, and keep the animal constantly improving. By feeding well, we do not mean high or extravagant feed ; but we mean, start the animal as you can hold out, and never suffer it to lose an inch which is gained ; for if you do, the forage consumed by the animal while falling back and again coming up to the point before attained, is lost ; also the time, care and attention bestowed upon it, and the interest on the value of the animal in the meantime. In addition to all this, it is doubtful whether an animal so treated is capable of becoming so perfect as it might have been, if it had been at all times kept

gradually improving. It is easily perceived, that the farmer who does not at all times keep his domestic animals in good condition, does not practice that which is for his interest ; but we wish also to appeal to his humanity. Can the farmer, who suffers his domestic animals to roam over the highway or fields, with but a scanty pittance for food, and no protection from the chilling blasts of winter, wasting away the little flesh they may have gained in summer, and perhaps losing life itself from actual starvation, lay any well-founded claims to humanity ? We think not. If any of us are thus cruelly treating our domestic animals, would it not be well for us to reform our own practice before we charge our southern neighbors with cruelty ? The abolition of cruelty to animals should at once be adopted, and no person who refuses to comply with its reasonable and humane requirements, can plead that the Constitution forbids it, legal enactments are opposed to it, or that self-interest is not promoted by it.

SEVENTHLY—Necessity of barns and sheds sufficient to store all crops, and protect domestic animals from the inclemency of the weather.

The following are a few of the many reasons which might be urged in favor of barns and sheds sufficient to store all crops, and protect domestic animals from inclement weather.

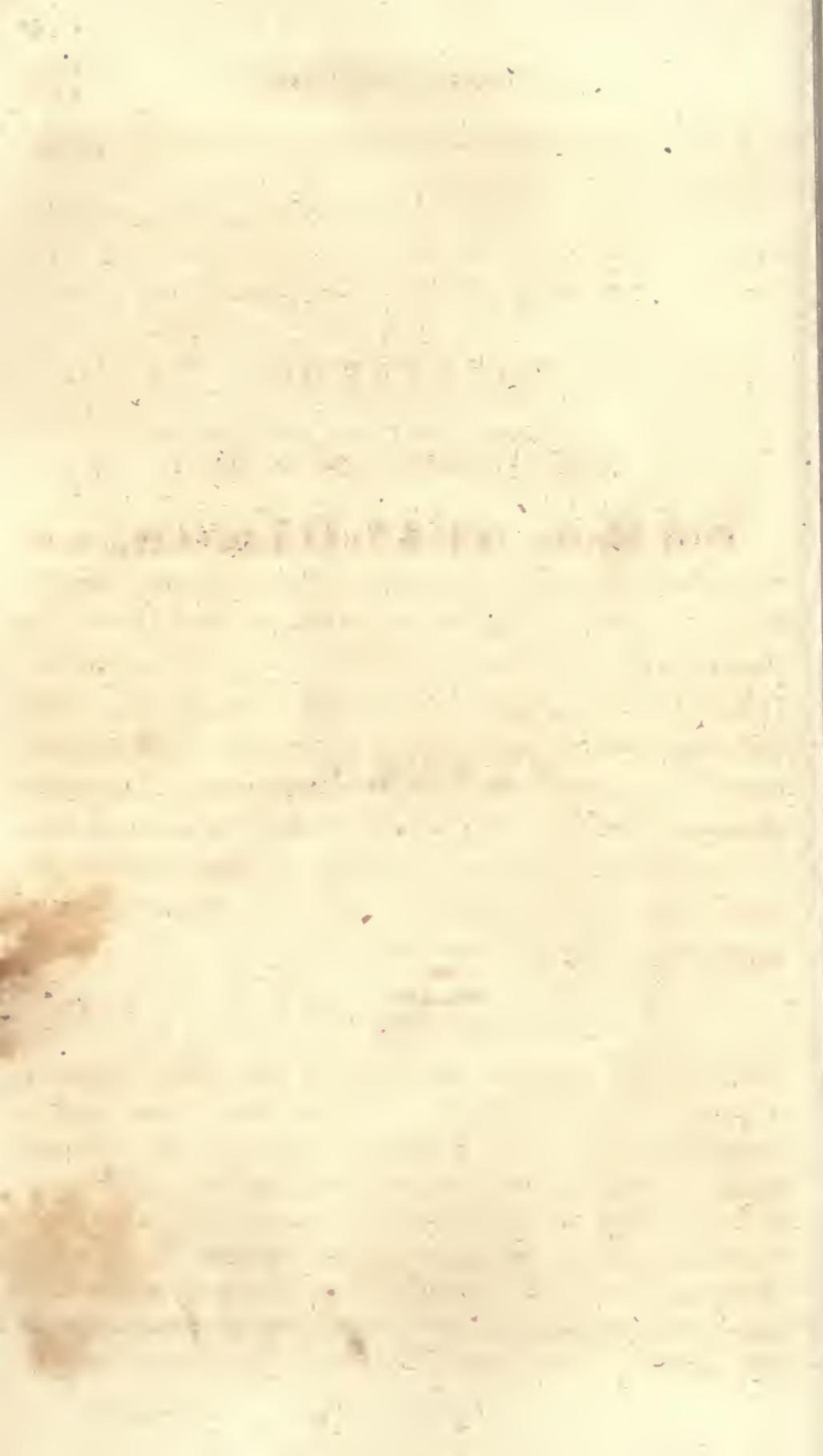
1. Crops are preserved in better condition in barns than they can be in stacks.

2. Hay or grain when deposited in stacks, is always in an unsafe condition until the stack is completed, which frequently cannot be on the day when commenced, and sometimes several days will unavoidably elapse between the commencement and completion. This inconvenience

and loss are obviated by the use of barns, for each load when deposited is considered safe.

3. All forage for domestic animals can be more conveniently and economically fed from barns than it can be from stacks; for when the stack is opened, a certain portion is always exposed to injury from storms, and a considerable portion, when fed to animals, is blown away or trodden under foot. The animals, while consuming the feed, are exposed to cold sleet and chilling blasts, from which they would gladly retreat, did not stern necessity compel them to eat thus exposed or starve. No animals thus exposed can be expected to thrive; and it is certain they will not, unless they consume a much greater quantity of food than would be required if kept dry, comfortable, and not compelled to fight the whirlwind.

4. When animals are fed in stables or sheds well littered, a larger quantity of manure may be made—a large proportion, if not all of which can be kept under shelter, and thus preserved from the great loss which exposure to storms occasions.



CHAPTER IV.

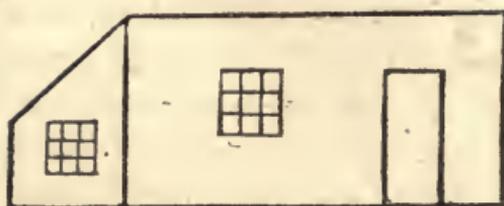
FARM BUILDINGS, FENCES, ETC.

IN this department will be found ample directions for the various kinds of dwellings which our readers may be likely to need; from the rude, though comfortable log *shanty*, to the costly and tasteful framed and brick house.

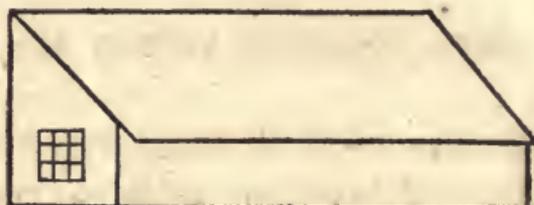
In the selection of a spot for a dwelling, one that is dry and somewhat elevated should be chosen. The convenience of a spring should also be considered. If there be handsome trees standing on and around the selected site, be careful *not to cut down too many of them*. Spare the trees; you will not repent it. Have an eye to ornament as well as utility and convenience.

LOG SHANTY.

Some will advise a *house* to be first built, others a "shanty;" but the latter is so expeditiously done, and is so much cheaper, and a comfortable house till the emigrant gets "acclimated," that we consider it the best. A shanty is built of logs cut from the felled trees. The size of the building to be according to the number of the family. They are to be seen from fourteen feet long and twelve broad, to eighteen feet by fourteen feet or so—the shape as follows:



FRONT.



BACK.

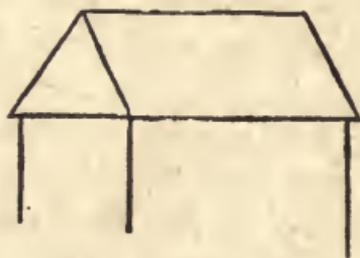
The roof may be covered with shingles, or with boards. Shingles are made from the pine, by cutting a pine-tree down, and then cutting it with a saw called a "cross-cut saw," into lengths or blocks of eighteen inches long, (they are cut sometimes twenty-four inches long,) and these blocks are split into thin slices of different breadths, but they will be about one length. These are shaved off with a drawing-knife, at one end, when the shingle is done. They are sold from one and a half dollars to two and a half dollars per bunch, containing what is called one thousand shingles, of different breadths. A thousand shingles will cover about ten feet square of a roof, (that is, equal to 100 square feet.) They are laid on boards, (and the roughest and cheapest boards, split or sound, will do,) like the slates or tiles of the old country houses. No rain or wet will get through them, and they answer all the purposes of the slated, tiled, or thatched roof of a house in the old country. But the roof of the shanty may be covered with boards. These are put on the roof,

breadthways, and are got of lengths to extend across the breadth of the roof; and if put on two inches apart from each other, and if the boards are twelve inches broad, will, in a roof of fourteen feet long, take only about thirteen boards, allowing them to "lap" over at the ends. The *spaces* between each of the boards are then covered by slabs, or by narrow boards. The roof is then completed. *Slabs* are the outside "slices," as we may term them, which are taken off the logs at the saw-mill, in squaring them to make straight-edged boards. These can be got at the mill for taking them away, though sometimes a *cent* is asked for each slab. The spaces between the logs are filled in from the inside of the building by split pieces of basswood, cedar, or other wood, which splits easy, and this operation is called "chinking." On the outside of these spaces, the settler then plasters them over with mortar; being the clay mixed up with water, and which makes a good substitute for lime. By mixing a little sand with the mortar, it makes it harder when dry, and not so liable to crack. The chimney is built at one end of the shanty, and may be built in two ways, by split laths, (split pieces of basswood,) and then plastered over with mortar, or by making, as it were, four ladders, spars of which, ten inches or so apart, and then filling up the spaces with what are sometimes called "cats," being mortar mixed up with hay (wild meadow hay the best,) or straw, and moulded by the hand into lengths, according to the breadth of the spars in the ladders; and these are laid over the spars and joined together, each succeeding course being joined to the one below, and thus form when dry a continued and solid chimney, perfectly free from harm by the fire, which the first described chimney (by split pieces of wood,) is not. But this, and the fixing the windows and the door, by cutting out the logs of the

building and fitting in windows and door-casings, etc., will at once be learned, in a few hours, by an inspection by the emigrant on the spot, and by the hints from his neighbors. If the emigrant will spare the money, carpenters (wrights and joiners) can be got to fix the roof, windows, door, and floor.

LOG HOUSE.

If the emigrant resolves on having a *house* in place of a shanty, we may state that it costs more money, time, and labor, than a shanty will. The work to be done to a house is of the same *kind* as required for a shanty, which being described need not be repeated. The difference is, that the house is built up of logs to the height of ten feet, or so, on the four sides, and there is an upper floor, joists being put in as the building is raised. Houses vary in size from twenty feet by sixteen or eighteen, to thirty feet long and twenty feet wide. The roof is not a shed or shanty roof, but the same as an ordinary house, shaped like this:



When the shanty or house is to be raised or built, the neighbors are invited, and they always come willingly, for there is not one among them but had the same done to himself. This is called a "bee."

By turning to the second chapter of this book, page 26, a more minute description of the manner of making a

log-house may be found ; together with an accurate estimate of the expense."

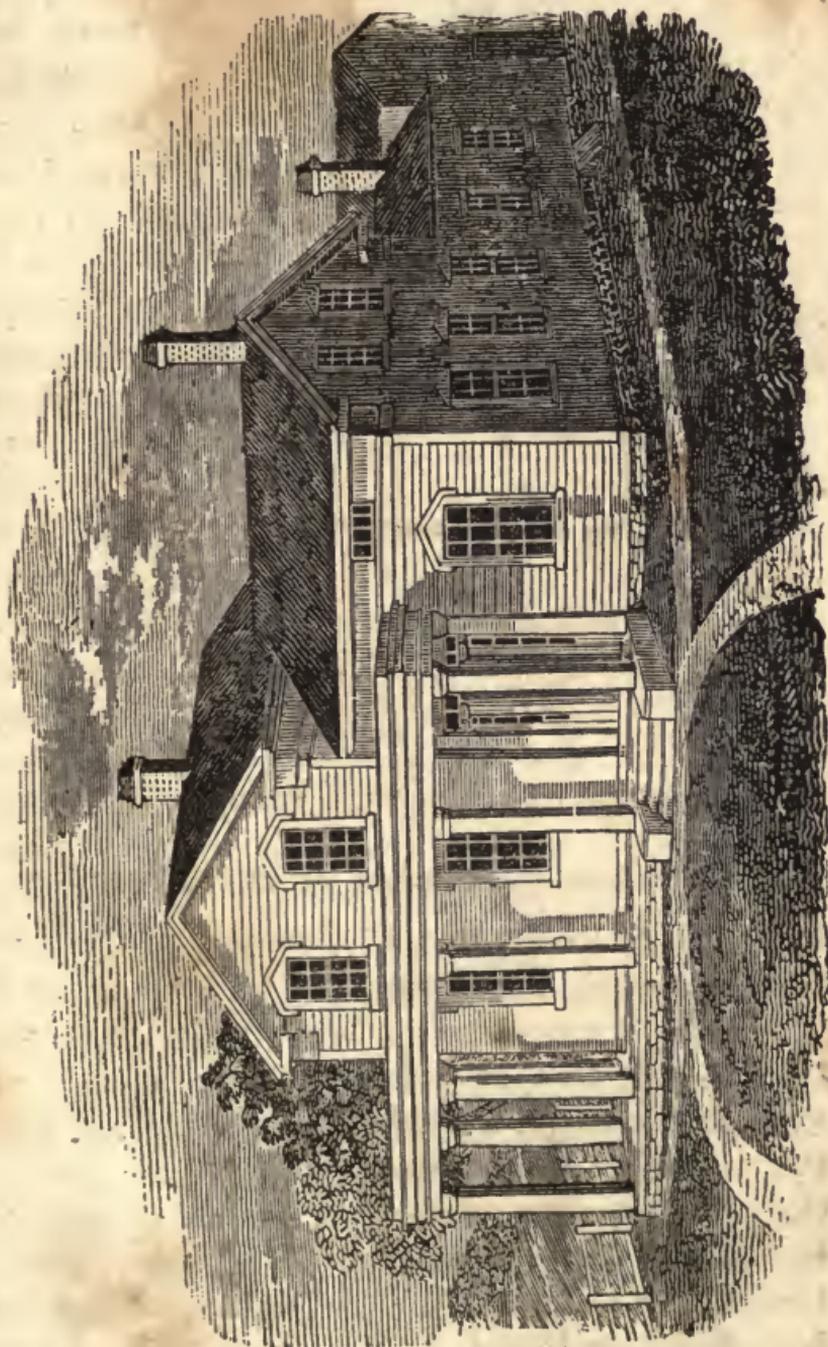
It may be well enough to add, that *elm bark* makes a good covering for the roof, instead of shingles. In the spring of the year, when the leaves are just coming out, the bark peels off easily, and pieces as large as two men could lift can be taken off. The bark, after being stripped off, should be spread out flat to dry a little. It may then be put on the roof in strips of four or five feet in length, and as wide as the bark will allow. It should then be pinned down with hemlock or maple pins. An auger will be necessary to make the pin-holes true, so that they shall not leak.

PLAN FOR A FARM COTTAGE.

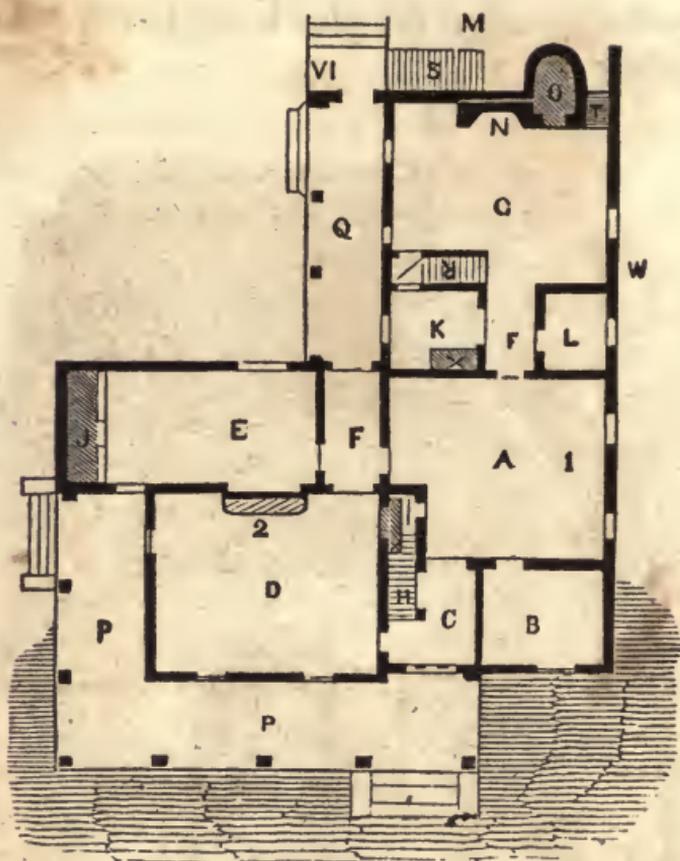
The accompanying plan is designed for a house that will be within the means of most farmers. It is arranged to be built at separate times, or all together, as may best suit the wants or ability of the builder. The object has been to combine convenience and comfort with economy, and at the same time have it make a pleasant appearance. Economy in the use of fuel is aimed at in the arrangement of fires, and for this reason stoves are used, and no fire-places made except for the kitchen; the chimneys merely coming sufficiently below the ceiling of the upper rooms to admit the pipe. The wing is eighteen feet by twenty-four, with fourteen feet posts, the roof spanning the long way, and contains the hall, stairs, a large room and a small bed-room, and a closet under the stairs, on the first floor, and two chambers with closets on the second floor. The lower story to be eight or nine feet in the clear, leaving a comfortable attic above. The main building is eighteen feet by twenty-six, with eighteen feet posts, with a piazza on two sides, which is to be extended in front of the wing to shelter the door; this contains the parlor and bed-room, with a closet, and a passage communicating with the other parts of the house, on the lower floor, and two chambers with closets on the second floor. The lower story to be ten feet high, the upper rooms to be arched under the roof, making them from eight to nine feet high.

The rear is one story, eighteen feet by twenty-two, with a piazza on one side, and contains the kitchen, pantry, and cheese-room, back and cellar stairs. The cellar is planned to extend under this part of the house, though it can be made larger if desired. The outside cellar-door and windows are shown in the elevation. The wood-house is to be joined to the rear of this, and is partly

shown in the plan, but the size is left to the convenience of the builder.



PERSPECTIVE VIEW OF ELEVATION.

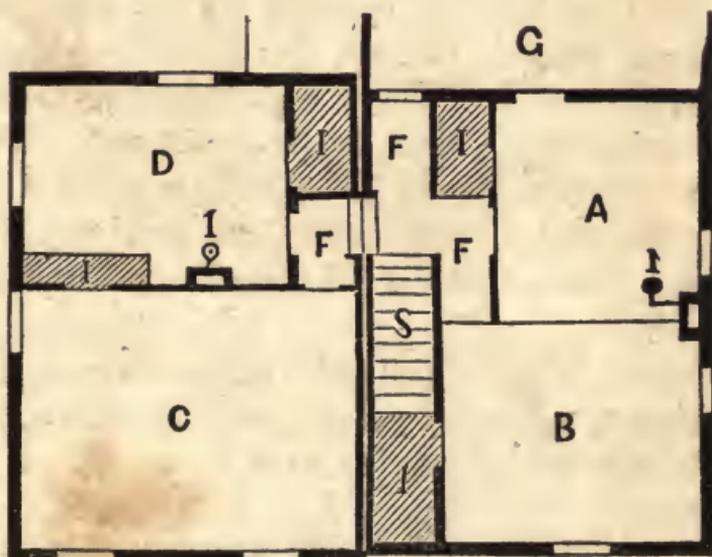


GROUND PLAN—FIRST FLOOR.

EXPLANATION—DIMENSIONS IN THE CLEAR

- A, Dining Room, 14 x 17 feet.
 B, Bed-room, 8 x 11 feet.
 C, Hall, 6 x 8 feet.
 D, Parlor, 15 x 17 feet.
 E, Bed-room, 10 x 16 feet.
 F F', Passages, 3½ feet wide.
 G, Kitchen, 16 x 17 feet.
 H, Front Stairs, 3 feet clear.
 I, Closet under Stairs.
 J, Bed-room Closet.
 K L, Cheese-room and Pantry,

- M, Wood House, 24 x — feet.
 N, O, Fire-place and Oven.
 P, P, Piazza. 7 feet wide.
 Q, Piazza, 6 feet wide.
 R, Back and Cellar Stairs.
 S, Wood House Stairs.
 T, Closet.
 V, Cistern.
 W, Outside Cellar Door.
 X, X, Cupboards.
 1, Place for Stove.
 2, False Fire-place.



GROUND PLAN—SECOND FLOOR.

EXPLANATION.

- A, Room, 11 x 11 feet.
 B, do 11 x 14 feet.
 C, do 14 x 17 feet.
 D, do 10 x 14 feet.
 I, I, I, I, Closets.

F, F, F, Passages.

G, Garret over Kitchen.

1, 1, Stove Pipes and Chimneys.

S, Stairs.

The explanations of the cuts refer to the house when it shall be completed—there is no extra room to be kept for great occasions; by removing the piazza on the side, and building another wing, an extra parlor can be obtained, which may communicate with the other by folding or sliding doors if desired, and also a small office or library communicating with this parlor and the bed-room. This would give the exterior a more regular appearance.

The bed-room is to be warmed by the pipe from the parlor stove, passing through the false fire-place into a sheet-iron dummy, and thence up through the room above, which it would warm some, into the chimney. The cooking stove might be placed in the room marked A, in cold weather, the pipe passing through the room above into the chimney. This would keep the house comfortably warm with two fires.

The pantry, cheese-room and cellar stairs, are placed with a view to this arrangement, and the parlor and bed-room are separated from this room by a passage, for the same reason.

In the ground plans, the doors are represented by fine single lines, and the windows by double lines. The bed-room window which opens on the piazza, should reach down to the floor, as also the parlor window opposite the steps. The stairs are crowded forward into the hall some, to bring the landing at the top in the right place. They are lighted at the top by an attic window at the end of the central passage F.

The windows of each room are made to look out to as many points of the compass as possible, as it adds much

to the pleasantness of the house, especially in warm weather; and the doors which communicate from one room to another, are nearly in direct lines.

It is not to be expected that a plan can be made to suit all situations; the formation of the ground, and the point of compass to which it must front, would necessarily require it to be varied, in some cases, even if the plan itself suited in the detail. This may be done by inverting the plan: an easy way of doing, which is to place it before a window and draw the lines on the opposite side of the paper.

I have drawn this to be built of wood, as that is the most common way of building. It may be built of brick or stone, by allowing a little more for thickness of walls.

Chicago.

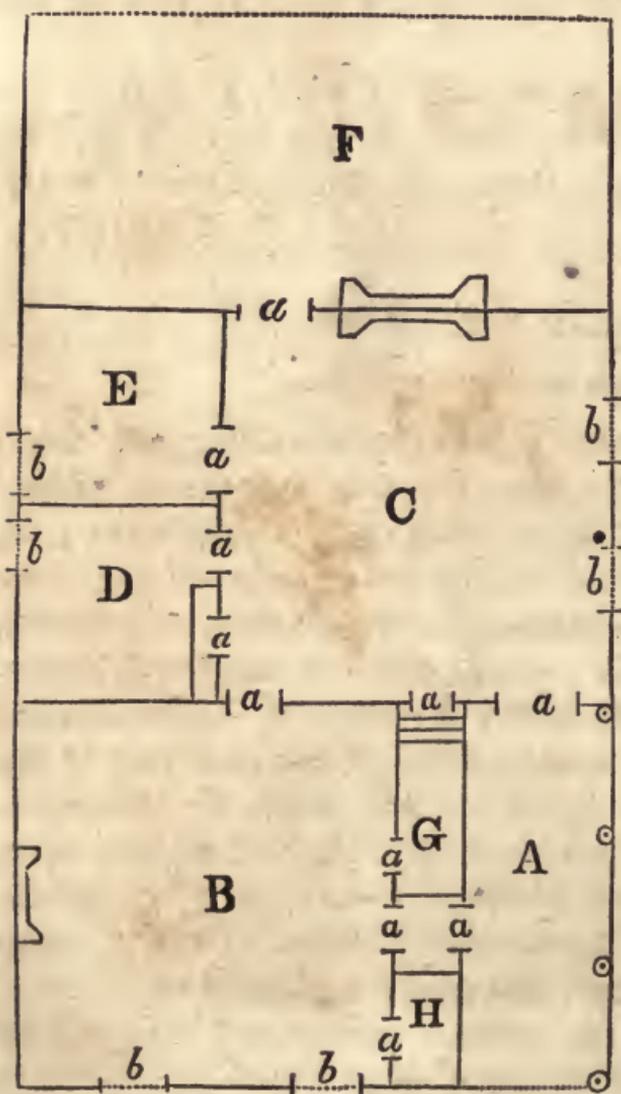
T. WRIGHT.

CHEAP FARM-HOUSE.

FROM SOLON ROBINSON, ESQ.

Inclosed, I send you a plan for a small cheap farm-house, twenty-four by thirty-two feet, and one-and-a-half story high. I have designed to set the south end to the road, so that the main entrance would be on the south end of the porch and thence into either room. The east side of the porch, I should hope to see ornamented with woodbine, honeysuckle, or some of the family of creepers. In the summer time, such a porch would be the pleasantest part of the house—a delightful fragrant shade in a sultry afternoon. You see I have made a good-sized kitchen, for in a farm-house this is the room principally occupied by the whole family; and should be so arranged that it will be warm and pleasant in winter, and easily ventilated in summer. The shed at the north end will protect that side, and afford room for wood, etc., and in summer, will be very useful for washing, soap-making, and other rough work.

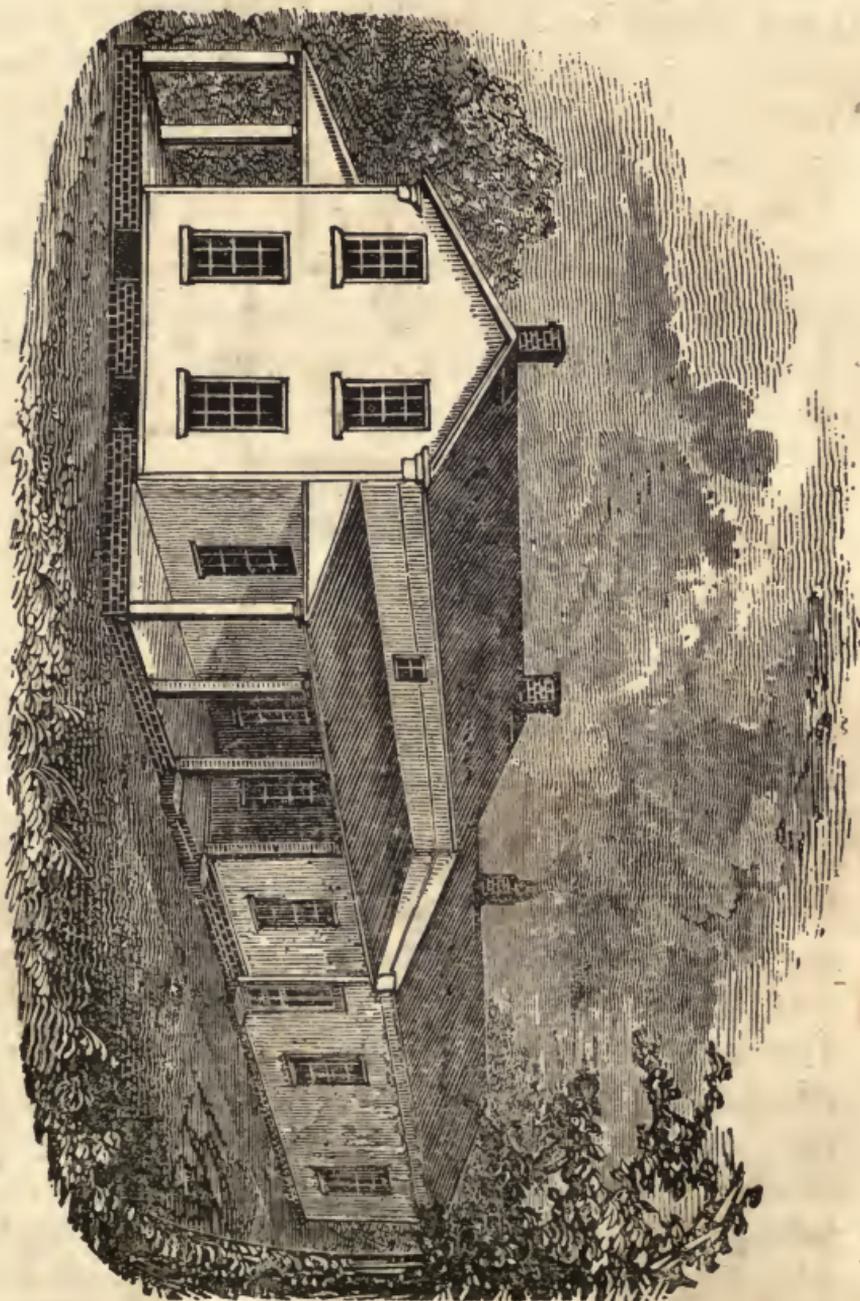
In placing the stairs, I have not calculated for a cellar, as I do not believe that, in this climate and soil, it is healthy to have a cellar under the dwelling; but if one is required, I would open the door on to the porch, which would prevent the deleterious gas from rising up the stairway directly into the room. If the builder should prefer to have the front room larger, he can run the stairs up one side of the pantry. In that case, he could build the kitchen part complete in itself, and afterward add the front part.

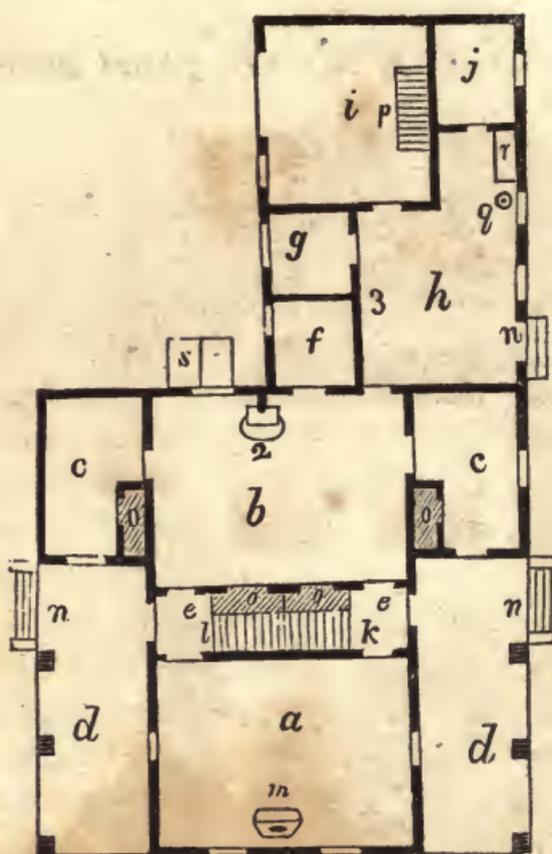


DESCRIPTION: A, piazza, 6 by 16 feet; B, parlor, 15 by 16; C, kitchen, 16 by 16; D, pantry, 8 by 8, including cupboard; E, bedroom, 8 by 8; F, a shed, with lien-to roof, 12 feet deep, more or less; G, stairs, 3 by 8. door from the kitchen—if there is no cellar, a closet can be made under them, opening into the parlor; H, a closet, 3 by 5, opening into the parlor; a, doors; b, windows.

PLAN OF A PRAIRIE FARM HOUSE.

PERSPECTIVE VIEW.





GROUND PLAN.

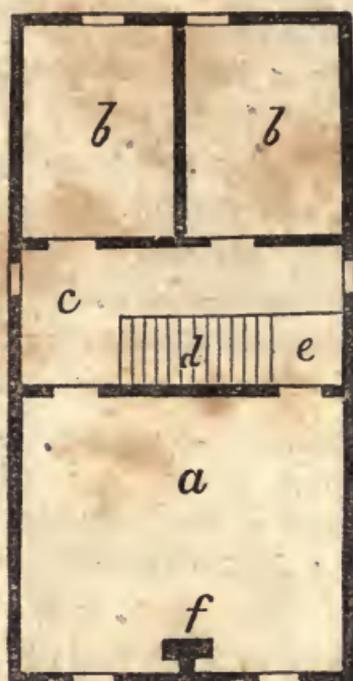
A PRAIRIE FARM HOUSE.

The annexed plan is designed for a prairie farm-house, and is calculated to combine economy, comfort, and convenience, with a pleasant and home-like appearance. The importance of this requisite, is not generally appreciated in the construction of farm dwellings in this country; and although a tasty appearance is considered desirable by most farmers, many think it a waste of money to lay out fifty or a hundred dollars on piazzas and the like additions to a house, costing ten to fifteen hundred dollars, to secure this end. To be sure, the moral benefit arising from having an attractive dwelling for a home, cannot be estimated in dollars and cents; yet who will deny

that our happiness, the object we are all in search of, is sensibly increased by it. There is now and then a farmer who has the good sense to appreciate this object ; and to aid such, this plan is offered for publication. It is designed for a southern or eastern aspect, the end fronting to the road. The plan is drawn for a frame-house, but may be altered for brick or stone, by increasing the thickness of the walls. Its convenience will be seen at a glance. It contains all the room which a farmer in moderate circumstances needs, and there is none that is superfluous. Should any like to build after the plan, who are not able to build the whole at once, the rear part can be put up first, and will answer as a dwelling by using the meal-room as a bed-room. The main building is eighteen by thirty-six feet, outside ; the lean-to-additions, each eight feet wide. The rear building is eighteen by twenty-five feet. The posts to the main building are sixteen feet ; to the piazza, ten feet ; to the rear building, twelve feet. The rooms upon the lower floor are nine feet between floors, and the chambers eight feet. The room *b* is intended for a dining-room in summer, and the room *h* for a summer kitchen ; in winter, the room *b* to be used for both purposes. The expense of completing the whole, including cellar under the main part, is estimated at from \$800 to \$1000, according to location and the material used.

EXPLANATION OF GROUND PLAN. *a* parlor, 17 by 15 feet ; *b* kitchen, 17 by 15 feet ; *c c* bed-rooms, 8 by 13 ; *d d* piazzas, 8 by 23 ; *e e* entries, 6 feet wide ; *f* buttery, 6 feet square ; *g* milk-room, 6 feet square ; *h* back kitchen, 12 by 13 feet ; *i* wood-house, 12 feet square ; *j* meal-room, 6 by 8 feet ; *k* chamber stairs, 4 feet wide ; *l* cellar stairs ; *m* Franklin stove ; *n n* steps ; *o o o o* closets ; *p* wood-house stairs ; *q* pump ; *r* sink ;

1 bulk-head, covering outside cellar stairs; 2 cooking stove; 3 place for stove in summer.



SECOND STORY.

EXPLANATION. *a* chamber, 17 by 15 feet; *b b* bedrooms, 12 by 8 feet; *c* passage; *d* staircase; *e* closet; *f* drum, connected by pipe with stove below.

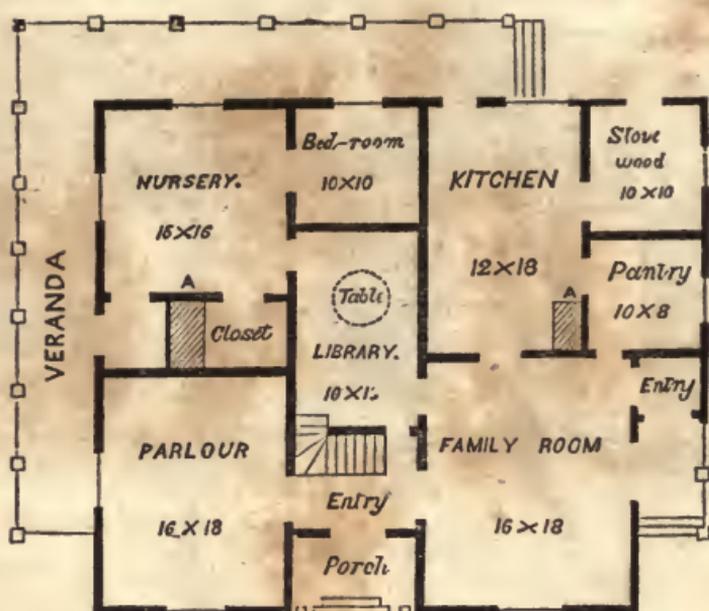
DESIGN FOR A FARM HOUSE AND OUT-BUILDINGS.

BY JOHN J. THOMAS, MACEDON, N. Y.

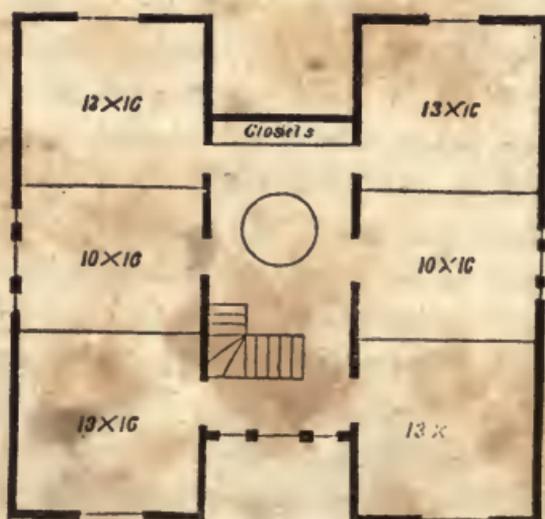
Figures 1, 2, 3, represent the farm-house—fig. 1, the elevation, partaking of the Italian style; fig. 2, the ground plan, and fig. 3, plan of the second floor. A form nearly square is given to the building, for the sake of economy, requiring far less external covering for the space inclosed; at the same time the outline is somewhat broken, to prevent heaviness and monotony of expression. About half

ELEVATION—*Fig. 1.*

is surrounded with a veranda, under which lathing and plastering may take the place of clapboards, and thus save expense. The whole building may be considered as composed of two parts or wings, extending from front to back; the ridge of their roofs also in the same direction, connected by a centre building with the roof, at right angles to the two former. The two wings are chiefly occupied as parlor and family room in front, and kitchen and nursery back; and the centre part as a library, (for books, minerals, maps, astronomical diagrams, etc.) lighted by a skylight in the roof, through a circular opening surrounded by a railing, in the second floor. This opening will admit of thorough ventilation of the adjacent rooms below, if desired, or it may be closed by a sash of glass, the light softened by a translucent varnish. The kitchen is lighted with one very broad window. A, A, are chimneys, and admit of open fire-places for the parlor, nursery, kitchen and family room. If a hot air furnace is used, by placing it under the centre of the library, the heated air may be easily conducted to all the rooms

GROUND PLAN—*Fig. 2.*

above. The nursery entry opens on the large veranda, enabling children to take fresh air in all weathers. A back entrance to the parlor may be easily made from the

SECOND FLOOR—*Fig. 3.*

same entry, if wished. The bed-room, adjoining the nursery, is covered with a lower roof, separate from the rest of the roof, and corresponds with the roof of the porch.

The eaves are five feet above the second floor; and four feet additional rise in the roof, gives ample height for the upper rooms, which may be six in number, and allow sufficient space for closets.

The dairy should occupy the coolest part of the cellar, and be entirely separated from other parts by walls. The best and cheapest material for the floor, is a coating of two inches of water-lime mortar.

The size of this house will appear too large to many, but it is not larger than the houses of a large portion of our farmers, after piecing and patching; costs much less, and appears far better. It is much easier to pass from one room to another on the same level, than to pass a flight of stairs; hence the aim has been to have as many of those in common use on the same floor. This also contributes to economy in erection—as calculation will readily show. A one-story house, ten feet high and forty feet square, will inclose 1600 feet of floor; a two-story house, twenty-eight and a half feet square and twenty feet high, will also inclose 1600 feet; but the latter will require 650 feet more of siding, which will cost more, with painting, than the addition in shingling the former.

A careful and liberal estimate, made from full bills of costs of several houses actually erected by the writer, places the cost of this building, if made plain, and of wood, at about \$1,400, at the average price of materials, teaming, labor, etc., in central and western New-York. This cheapness is owing principally to the cottage form, compact arrangement, and the diminution of siding and paint under the veranda.

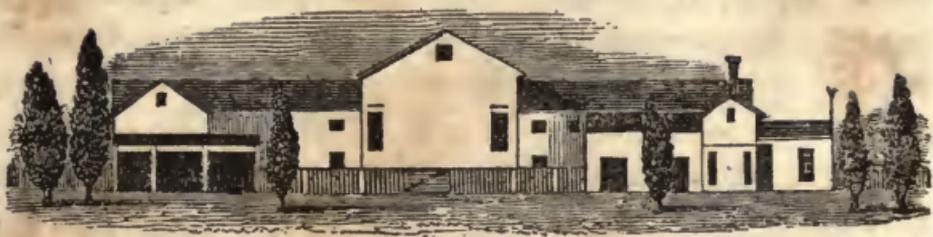
ELEVATION OF THE FARMERY—*Fig. 4.*

Figure 4, is an elevation of the farmery, and fig. 5 is a plan of the farmery, house, and adjacent grounds. The farm buildings form nearly a hollow square, the barn in the centre of the further range. In fig. 5, the barn cellar only is shown, being on a level with the stables on each side. The further part is for roots, and is filled through

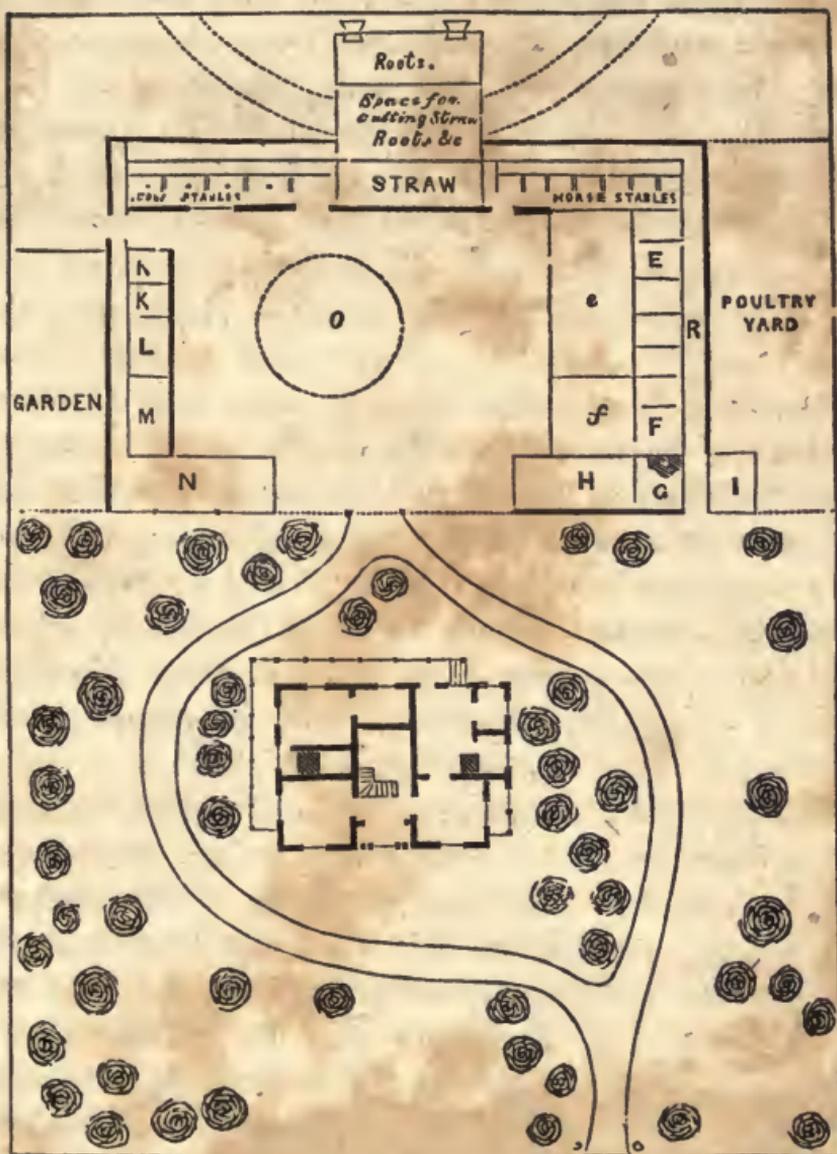
two windows with hopper-like troughs, into which the cart is dumped. The nearer part is for straw, to be used for cutting and for littering. From the intermediate space, passages four feet wide, run in front of the stables on either side, for feeding. Fig. 6, shows the upper floor of the barn; A, unthreshed grain; R, corn-crib; C, granary, the bin for oats, with an opening below for feeding horses; this opening closed by a sliding board. A door opens from each of the last, to facilitate loading of wagons from them in the yard below; the bay for straw extends upward as high as the top of the granary, over which a floor is placed for holding unthreshed grain above. The dotted lines show the wagon-way for entering and passing from the barn floor.



Figure 6.

below for feeding horses; this opening closed by a sliding board. A door opens from each of the last, to facilitate loading of wagons from them in the yard below; the bay for straw extends upward as high as the top of the granary, over which a floor is placed for holding unthreshed grain above. The dotted lines show the wagon-way for entering and passing from the barn floor.

This way should be wide enough on one side to place the horse-power of a threshing machine. A band may



PLAN OF FARMERY, HOUSE AND GROUNDS—*Fig. 5.*

extend from this horse-power through a hole in the floor, and drive the straw-cutter, root-slicer, etc., below. The hay for horses and cows is kept in the loft over the stables, from which it is conveniently thrown down into the passage in front of the animals. E, shed for sheep, with

racks at right angles to the passage R, from which they are filled with hay thrown down from above; *e*, sheep-yard; F, piggery; *f*, pig-yard; G, room for boiling roots; I, poultry-house; P, passage from manure yard, *o*, to back part of farm. K, K, calf-house; L, work-shop; M, house for ploughs, harrows, horse-rakes, rollers, etc.; N, wagon-shed. H, house for keeping store wood during seasoning, wood seasoned two or three years being much better than for a shorter period; and a rough boarded out-building, being also cheaper than a well finished, painted one in contact with the house. The manure yard *o*, should be about two feet below the surrounding buildings, to which the cleanings of the stables are to be taken daily in a large boxed wheelbarrow, and straw and marsh muck supplied as needed. The yard should be well supplied with water as convenience may dictate. Ventilators, made of square board tubes, should be placed over the stables and run up through the roof.

This plan may be changed, without altering the general arrangement, so as to contain more or less grain, more or less hay, stable room, etc., according to circumstances. The hollow square affords shelter to the yard from wind, an important consideration for our climate. The extent and expense of the buildings, are not greater than are often seen, when convenience of arrangement is entirely set aside; and the labor of preparing food, and feeding animals, double what it should be. The wings, sheds, poultry-yard, garden, etc., may be reversed, according to aspect and exposure to winds.

PISE, UNBURNT BRICK HOUSES.

In very many sections of the West, particularly where good lumber is obtained with difficulty, houses might be built with advantage after the following plan. The fol-

lowing was translated from the French for the Southern Agriculturalist.

In many of the northern departments of France, particularly in Champagne, the name of *Pisé* is often improperly given to a kind of unburnt brick or artificial stone, made with the mud of streets or roads, with which is (almost always) incorporated a little straw; this mixture is then pressed in wooden moulds, then taken out to be dried in the sun or shade. This pretended *pisé* is used for want of other materials suitable for building, and by this means are obtained the most miserable constructions possible, incapable of supporting the lightest roof; which consequently require a frame-work to be raised from the foundation to the roof, in order to support it. Besides, the repairs to this kind of building, render it really the most expensive of all; for this kind of brick soon cracks, warps, separates from the wooden frame, and soon falls upon the slightest shock, either outside or within the house. In other countries farther south, as Artois and Flanders, where stone buildings are very expensive, another kind of *pisé* or unburnt brick is used; although made in the same way, they are very good, on account of the quality of the earth, which is chalky and compact, and which even without straw does not crack in the sun. These bricks cement so well with mortar, that when an old wall or chimney is pulled down, it is not uncommon to see it broken into only three or four pieces by its fall. These buildings can therefore be solid and economical, for the only remarkable expense is in the foundations, which ought to be rubble-work, brick or tabbey, raised at least one foot above the earth around. As to the true *pisé*, which we derive from the Romans, it is still much used at Lyons, and in some of the southern departments—also in Italy, Spain, etc. It differs essentially from the bricks

or artificial stones that have just been described. It also, however, is only an unburnt earth, not tempered, but slightly moistened; rendered very fine, then squeezed and well beaten in large or small moulds, or between two boards strongly fastened to each other, by which means can be constructed inclosures, walls and houses of several stories of no greater thickness than is common in masonry. "It would appear almost incredible," says Mr. Rosier, "if experience did not support the assertion, that walls of earth could last many centuries, provided they are well plastered with mortar, protected from the rain, and secured against moisture by foundations in masonry raised above the level of the earth."

As to the kinds of earth, there are very few which are not suitable for pisé, except pure clay, because it cracks in drying, and pure sand, because it admits of no adhesion. Where there is a choice, the preference is to be given to that which is stiff—that which sets or clods easiest; which is known by its retaining the shape given to it by the hand, without sticking to the fingers—such generally is the untried earth of gardens. Stiff earth, mixed with gravel, provided it is not too coarse, is employed with equal success; it ought also to contain no admixture of roots or manures, which by rotting would allow the air to penetrate and injure the wall. As to the moisture that this earth ought to have, it ought to be the same that it usually has in a natural state, at two or three feet below the surface. When it is well pulverized, it is put into the moulds or between two boards, and well rammed or beaten with rammers, which will reduce its volume and allow more earth to be added, which must be beaten in the same manner, until the moulds or boards are exactly filled.

Previously to adding more earth, the last layer ought

to be scratched with a sharp iron, or small mattock, in order that the two layers may join exactly, and form but one body. At Lyons, where this style of building is very common, they have large cases or boxes, without bottoms, which are supported by pieces of boards laid across the walls; the pieces are movable, and can be placed in succession; as they are filled with pisé, the short boards are drawn from their original places, and carried further on to support them again, and so on in succession. In the adjustment of one round to another, mark or scratch the work as above, or put a little mortar to serve as a cement. Also, from one story to another, it is necessary to put some bits of rough board, flat and in different positions at the corners, to prevent the walls from separating. The partitions are done in the same way. Spaces are always kept open for windows and doors, by placing the frames for them beforehand, or they are set in brick or stone, where either is convenient.

By either method of making the pisé, in a little time, and at small expense, can be constructed houses and other rural buildings, covering them like brick or stone houses. Both these methods have, however, an essential defect; which is, that the ramming of the earth, and consequently the hardness and solidity of the pisé, vary from one box to another, and from morning to afternoon. This solidity depends, in fact, upon the expertness and strength of the rammers, which are not always in the same degree. In the morning, for instance, the work is always well rammed, but toward night, fatigue necessarily causes some diminution: hence, a sort of imperfection in the work. Again, as the work must be done in the open air, (which suits warm countries very well, where it rains at long intervals,) it is often exposed to rains in our mild climate: (France :) and rain is a great obstacle, which occasions

almost always a good deal of imperfection in the making of pisé. It was for this reason that Cointereau, architect from the city of Lyons, having settled at Paris toward the end of his career, conceived the idea of making his pisé beforehand under sheds, in small moulds, where it was easier to press them always equally, and to allow them to dry beforehand, sheltered from the rains and other vicissitudes of the seasons: which produced in the end true bricks or artificial stones of great hardness, and consequently excellent materials for building. It must be understood that in working them, as in using hewn stone, a little thin mortar or quick-lime will be required. In some places, stiff earth makes an excellent mortar for this kind of pisé. The size and shape of the moulds can be varied in such a way as to answer in all cases and for all purposes. In this way, can be made beforehand, not only artificial stone, ready cut for the corners and angles of the windows and doors, but also for pilasters, columns, circular, elliptic and gothic arches, etc.; for experience has proved, that with the exception of the key, which can be of wood as well as hewn stone, pisé can be used for the vaults of cellars provided it is protected from moisture. However, for the brick, and even for every other purpose, it would be as well to prepare moulds of only moderate dimensions, so that each brick shall not weigh more than twenty-five or thirty pounds, then one man can easily handle and place them: otherwise it would be necessary to employ more men, more time, and tools which necessarily wear off the corners of these stones or bricks, and injure them. It will be seen in the sequel how economical is this style of building, even in countries where wood, stone and lime are more abundant. It is the true rural construction, cool in summer, warm in winter; and is besides susceptible, at a small expense, of the handsomest

decorations by means of fresco paintings, which are easily put on, and resist the vicissitudes of the seasons ; it will be seen also, that they can be of very great solidity.

The rich proprietors and merchants of Lyons, who have delightful villas in the environs of this city, build them exclusively of pisé, plastered over and painted in fresco in the best taste, and at very moderate expense.

This plastering ought not to be put on until the pisé is completely dry, unless it be done in quick-lime, or lime very freshly slaked.

A pisé house has the double advantage of being soon finished and habitable, and of costing much less than another. It also furnishes, when it is pulled down, an excellent manure for moist soils. I repeat, it is the true rural and rustic building, for the rich as well as for the poor, and that can be adopted in every country. It can also last centuries if it be well done. Not only many modern authors, and among others Rosier, affirm these advantages, but all the ancients have proved it, and Pliny the younger mentions, that Hannibal had built in Spain lanterns and towers upon the summits of mountains, which still were in existence in his day—which supposes at least three hundred years preservation. There is neither cement nor mortar, says he, which is harder than this earth, which resists rain, wind and fire. Cadet de Vaux mentions that the younger Baily, a French physician who went into Spain to study the yellow fever, visited some years since the ruins of Saguntum, dismantled more than two thousand years since, and could not detach a small sample of the pisé of which they were originally formed, without the assistance of a chisel and mallet ; and in our days the siege of Lyons has proved the solidity of this species of construction, in resisting the efforts of the most formidable artillery : in truth, the

balls passed easily through the walls of pisé, but did not shake them, while it upset easily and with a great crash those walls in round or hewn stone. At any rate, if, as it has been said in the beginning, it is desired, like Coignereau, to make pisé beforehand under sheds, in small moulds, as well for greater facility as to secure greater hardness and a more equal compression, and to avoid the irregularities of the seasons, etc., this is what we have first to consider. Experience has generally proved that fine earth, being pressed to half its volume, as is necessary for greater solidity, weighs always from 120 to 160 lbs. the cubic foot, according to the nature of the elements which it contains; now a cubic foot contains 1,728 cubic inches—thus, an artificial stone or brick of pisé, the fourth of a cubic foot, will weigh 30 to 40 lbs., which would still be a great deal to be handled easily by one person, as it would often be necessary. Besides, experience has equally proved, that a person could do more work with small hewn stones, than with too large, in a given time; wherefore it would be well to reduce ours to the fifth or even the sixth of a cubic foot; they will still weigh 20 to 25 lbs. Now, if we are satisfied with a wall eighteen inches thick, which is suitable for many circumstances, we can content ourselves with artificial stones of six inches wide, four inches thick, and twelve inches long, making 288 cubic inches, or one-sixth of a cubic foot; in short, one of these stones lengthwise, and another across, and so on alternately in the construction of the wall, would enable us to keep exactly and always this thickness of eighteen inches; and if we wished to extend this thickness to two feet or reduce it to one, as partition walls would probably require, nothing would be easier, since in the first place it would be enough to put two stones end to end, and in the second, it would only be necessary

to put them one after the other in order to obtain the desired thickness. In any other case, it would be equally easy to arrange the lengths, breadths, and thickness of this kind of stone. Thus, a stone ten inches long, could be only five wide and five inches thick to make up, and if it was fourteen inches by seven, three inches thickness would be enough, in order not to exceed too much the prescribed weight of 20 to 25 pounds. For partition walls, small pisé stones of four inches thickness, by such length and breadth as would suit. Now that the size and weight of our pisé stones are settled, we will go to work in the following way, viz: we will first make strong moulds, having the prescribed lengths and breadths in the clear, and a height at least double the thickness the stones are to have; these moulds ought to be of good wood, well made and well mortised, in the same way as moulds for bricks. They must be filled with suitable fine earth, and struck off smooth without pressing it even with the upper surface of the mould. Next, press the earth tightly with the hand, then with a block fitting exactly the inside of the mould, compressing it to half its size either by means of a lever-press, mall, or other process that may be convenient. Such are the means pointed out by Cointereau, which are very easy to be understood and executed. What is more difficult is, after having pressed the block down sufficiently to reduce the brick of pisé to the desired thickness, to take out the brick easily, as it often sticks very hard in consequence of the great compression. In order to accomplish this, recourse must be had to all the means employed in brick-yards in similar cases; sand or earth very fine or very dry must be used. Before putting the earth into the moulds, the inside of the mould, the table upon which it is pressed, and the bottom of the block, must be well sprinkled with the dry

sand, etc.—the brick will then come out easily, by bearing upon the block and raising the mould, and provided that the mould is very little larger and longer below. When the mould is taken off, the brick must be taken in both hands with great care, and put upon a board to dry, as is done with bricks. If, after having employed all the means mentioned above, there should still be difficulty in getting the brick out of the mould, it will be necessary to heat the mould and grease the inside, and there will be no further trouble.

At the end of a few days, care must be taken to turn these bricks upon their side, and upon the other sides in succession, in order that the drying may be complete. When they are very hard or very dry, they can be piled carefully against the wall, to remain until wanted for use; then it will be the work of a few days only to raise the intended buildings, and nothing will remain but to cover them.

It must be understood that, for the angles of the windows and doors, suitable moulds and bricks of pisé must be prepared; and if need be, they may be cut with the saw, like true hewn stones.

PISE HOUSES.

In connection with the article upon this subject, Mr. Ellsworth's report will be found valuable. We cannot but believe this kind of building will become common in the West, and if experiments are made, we should be happy to learn of them.—*Prairie Farmer*.

After selecting a suitable spot of ground, as near the place of building as practicable, let a circle of ten feet or more be described. Let the loam be removed, and the clay dug up one foot thick; or if clay is not found on the

spot, let it be carted in to that depth. Any ordinary clay will answer. Tread this clay over with cattle, and add some straw cut six or eight inches long. After the clay is well tempered by working it with cattle, the material is duly prepared for making the brick. A mould is then formed of plank, of the size of the brick desired. In England, they are usually made eighteen inches long, one foot wide, and nine inches thick. I have found the more convenient size to be, one foot long, seven inches wide, and five inches thick. The mould should have a bottom. The clay is then placed in the mould in the same manner that brick moulds are ordinarily filled. A wire or piece of iron hoop, will answer very well for striking off the top. One man will mould about as fast as another can carry away, two moulds being used by him. The bricks are placed upon the level ground, where they are suffered to dry two days, turning them up edgewise the second day; and then packed in a pile, protected from the rain, and left to dry ten or twelve days, during which time the foundation of the building can be prepared. If a cellar is desired, this must be formed of stone or brick, one foot above the surface of the ground. For cheap buildings on the prairie, wood sills, twelve or fourteen inches wide, may be laid on piles or stones. This will form a good superstructure. Where lime and small stones abound, grout made of those materials (lime and stones) will answer very well.

In all cases, however, before commencing the walls for the first story it is very desirable, as well in this case as in walls of brick, *to lay a course of slate*; this will intercept the dampness so often rising in the walls of brick houses. The wall is laid by placing the brick lengthwise, thus making the wall one foot thick. Ordinary clay, such as is used for clay mortar, will suffice, though

a weak mortar of sand and lime, when these articles are cheap, is recommended as affording a more adhesive material for the plaster. The wall may safely be carried up one story, or two or three stories; the division walls may be seven inches, just the width of the brick. The door and window frames being inserted as the wall proceeds, the building is soon raised. The roof may be shingles or thatch. In either case, it should project over the sides of the house, and also over the ends, at least two feet, to guard the walls from vertical rains. The exterior wall is plastered with good lime mortar, and then with a second coat, pebble-dashed. The inside is plastered without dashing. The floors may be laid with oak boards, slit, five or six inches wide, and laid down without jointing or planing, if they are rubbed over with a rough stone after the rooms are finished. Doors of a cheap and neat appearance may be made, by taking two single boards of the length or width of the doors; placing these vertically, they will fill the space. Put a wide batten on the bottom and a narrow one on the top, with strips on the side, and a strip in the middle. This door will be a batten door, but presenting two long panels on one side, and a smooth surface on the other. If a porch or veranda is wanted, it may be roofed with boards laid with light joints and covered with a thick paper dipped in tar, and then adding a good coat, after sprinkling it with sand from a sand-box or other dish with small holes.

Houses built in this way are dry, warm in winter, and cool in summer, and furnish no retreats for vermin. Such houses can be made by common laborers—if a little carpenter's work is excepted—in a very short time, with a small outlay for materials, exclusive of floors, windows, doors, and roof.

The question will naturally arise, Will the wall stand

against the rain and frost? I answer, they have stood well in Europe, and the Hon. Mr. Poinsett remarked to me that he had seen them in South America, after having been erected 300 years. Whoever has noticed the rapid absorption of water by a brick that has been burned, will not wonder why brick walls are damp. The burning makes the brick porous, while the unburnt brick is less absorbent; but it is not proposed to present the unburnt brick to the weather. Whoever has erected a building with merchantable brick, will at once perceive the large number of soft and yellow brick, partially burned, that it contains—brick that would soon yield to the mouldering influence of frost and storms. Such brick are, however, placed within, beyond the reach of rain, and always kept dry. A good cabin is made by a single room, twenty feet square. A better one is eighteen feet wide and twenty-four feet long, cutting off eight feet on one end, for two small rooms, eight by eight each.

How easily could a settler erect such a cabin on the western prairie, where clay is usually found about fifteen inches below the surface, and where stone and lime are often both very cheap. The article of brick for chimneys is found to be quite an item of expense in wood houses. In these mud houses no brick are needed, except for the top of the chimney, the oven, and casing of the fire-place—though this last might be well dispensed with. A cement, to put around the chimneys, or to fill any other crack, is easily made by a mixture of one part of sand, two of ashes, and three of clay. This soon hardens, and will resist the weather. A little lard or oil may be added to make the composition still harder.

Such a cottage will be as cheap as a log cabin, less expensive than pine buildings, and durable for centuries. I have tried the experiment in this city, by erecting a

building eighteen by fifty-four feet, two stories high, adopting the different suggestions now made. Although many doubted the success of the undertaking, all now admit it has been very successful, and presents a convenient and comfortable building, that appears well to public view, and offers a residence combining as many advantages as a stone, brick, or wood house presents. I will add what Loudon says in his most excellent work, the *Encyclopædia of Agriculture*, pp. 74 and 75 :

“The great art in building an economical cottage, is to employ the kind of materials and labor which are cheapest in the given locality. In almost every part of the world, the cheapest article of which the walls can be made, will be found to be the earth on which the cottage stands ; and to make good walls from the earth, is the principal art of the rustic or primitive builder. Soils, with reference to building, may be divided into two classes : clays, loams, and all such soils as can neither be called gravels nor sands, and sands and gravels. The former, whether they are stiff or free, rich or poor, mixed with stones or free from stones, may be formed into walls in one of these modes, viz : in the *pisé* manner, by lumps moulded in boxes, and by compressed blocks. Sandy and gravelly soils may always be made into excellent walls, by forming a frame of boards, leaving a space between the boards of the intended thickness of the wall, and filling this with gravel mixed with lime mortar, or, if this cannot be got, with mortar made of clay and straw.

“In all cases, when walls, either of this class or the former, are built, the foundations should be of stone or brick, and they should be carried up at least a foot above the upper surface of the platform.”

We shall here commence by giving one of the simplest modes of construction, from a work of a very excel-

lent and highly estimable individual, Mr. Denson, of Waterbeach, Cambridgeshire, the author of the Peasant's Voice, who built his own cottage in the manner described below :

“*Mode of building the mud walls of cottages in Cambridgeshire.* After a man has dug a sufficient quantity of clay for his purpose, he works it up with straw ; he is then provided with a frame eighteen inches in length, six deep, and from nine to twelve inches in diameter. In this frame he forms his lumps, in the same manner that a brick-maker forms his bricks ; they are then packed up to dry by the weather ; that done, they are fit for use, as a substitute for bricks. On laying the foundation of a cottage, a few layers of brick are necessary, to prevent the lumps from contracting a damp from the earth. The fire-place is lined and the oven is built with bricks. I have known cottagers, where they could get the grant of a piece of ground to build on for themselves, erect a cottage of this description at a cost of from £15 to £30. I examined one that was nearly completed, of a superior order ; it contained two good lower rooms and a chamber, and was neatly thatched with straw. It is a warm, firm, and comfortable building, far superior to the one I live in ; and my opinion is, that it will last for centuries. The lumps are laid with mortar, they are then plastered, and on the outside once roughcast ; which is done by throwing a mixture of water, lime, and small stones, against the walls, before the plaster is dry, which gives them a very handsome appearance. The cottage I examined cost £33, and took nearly one thousand lumps to complete it. A laborer will make that number in two days. The roofs of cottages of this description are precisely the same as when built with bricks or a wooden frame. Cow-house sheds, garden walls, and partition

fence, are formed with the same materials; but in all cases the tops are covered with straw, which the thatchers perform in a very neat manner."—*Denson's Peasant's Voice*, p. 31.

MODE OF FENCING AND DITCHING.

A good embankment, three feet high, with a ditch, furnishing a drain for surplus water, is made with astonishing rapidity. The embankment affords a foundation for a short post to hold two or three rails, which is found sufficient to inclose or exclude cattle. The machine to make the embankment need not cost over two dollars, including labor and materials. It may be constructed by any farmer, with the help of an axe and auger. It seems almost incredible that two planks twelve feet long, united at an angle of eighteen or twenty degrees, can throw up dirt with such facility. The wedge and inclined plane seem united, and the only difficulty is, to ascertain at what angle dirt will slide. The angle above mentioned will answer in most soils. If the angle should prove too obtuse, the brace in the rear might be so formed as to graduate the scraper as desired. If the planks are extended in length, the height of the embankment may be increased, or the dirt thrown farther from the furrow, if the object is to turnpike the soil or to grade it for rails; and it appears, that the machine will greatly lessen the expense of making roads on lands where large roots form no obstacle to the common plough, which precedes this scraper. To expedite turning at the end of the furrow, a bent lever, (a crooked joint will answer,) affixed about the centre, will raise the machine so as to turn on a point; and much friction may be saved, by tacking to the land side a few inches of plank at the front and rear, or by

excavating the land side in the middle, if made from a solid stick.

A plough and scraper might be combined, but the same strength in two teams will be more desirable. When land is dear, the objection might arise that too much is wasted. This, however, will have no weight in the West, where land is plenty. Indeed, some in Europe have urged the benefit of sloping embankments, as they *increase* the surface for grazing; which is an admitted fact, the sides of a hill being greater than its base. An excavation is made on both sides of the embankment. The ditch is eighteen inches only, and the embankment eighteen inches above the common surface, making an elevation from the bottom of the ditch, perpendicularly, of three feet, and giving a slope at ten degrees, of about four feet. The slope, in some soils, must not exceed thirty degrees, which will depend upon the soil. Less than this would expose the bank to crumble by the frost, and more would make the acclivity so small as to permit cattle to ascend it. Nor is the improvement in making the embankment alone worthy of special notice. The posts are bored with dispatch by one or more augers, propelled by hand or horse-power. The augers are two and a half inches, and these, by two apertures, make a mortise of five by two and a half; but the second hole is bored so as to cut the circumference of the first, to lessen the chip between the two, which is easily removed by a chisel or hatchet. The rails are sharpened by a circular saw, by cutting one side so that when two rails are brought together, they just fit the mortise. The lap of the rails is about six inches, and makes a neat appearance; additional strength is given by pinning the upper rail. If rails are cut twelve feet three inches, four hundred and forty panels will make a mile of fence. This will determine the number of posts

which are inserted in a furrow, when the fence is to be made six inches deep, before the ditch is commenced; this will save all excavation for posts by hand, and, when the embankment is formed, the posts will be two feet in the ground.

If the team can travel twelve miles per day, this will give six passages on each side of the embankment, and completes one mile in extent in a day.

I will give an estimate of fencing different quantities of land. The size and shape of the tract materially affect the cost per acre.

Two teams, \$2 50 each, one day, (one with plough and one with scraper,).....	\$5 00
1,320 rails sharpened and delivered, at Mr. Robinson's estimate, two cents.....	26 40
440 posts, bored complete, three cents.....	13 60
Setting posts and putting in rails, five days.....	5 00
	<hr/>
Cost per mile.....	50 00
Add for contingencies 25 per cent.....	12 50
	<hr/>
	62 50

1 section, 640 acres, 4 miles, cost \$250 00, per acre.....	\$0 39
$\frac{1}{2}$ " 320 " 3 " " 187 50, "	0 58 $\frac{1}{2}$
$\frac{1}{4}$ " 160 " 2 " " 125 00, "	0 78
$\frac{1}{8}$ " 80 " 1 $\frac{1}{2}$ " " 93 75, "	1 17
1-16 " 40 " 1 " " 62 50, "	1 56
1-32 " 20 " $\frac{1}{2}$ " " 46 87, "	2 39
1-64 " 10 " $\frac{1}{4}$ " " 35 25, "	3 12 $\frac{1}{2}$

When roads or unoccupied land do not adjoin, the expenses will be reduced, since adjoining proprietors are bound to pay if they improve one-half the value of the fence.

This estimate is made from common prairie land, which is not more than three miles from timber, and where the

timber is good for splitting, and not over ten dollars per acre, and where the labor of mauling rails does not exceed seventy-five cents per hundred.

A sketch of the ditch, rails, fence, scraper, and augers, is given. Augers with sliding cutters are decidedly preferable. See plate I, figures 1 to 9.

A very simple machine for boring posts may be seen by referring to figure 13, plate II. It may be constructed by an ordinary laborer. Between the uprights, the post to be bored is fastened. The auger is changed by raising the piece of scantling which holds down the same, and runs between two pieces of scantling fastened at one end by a hinge of leather or iron, and at the other by a pin. The holes are made to accommodate the wishes of the fence-maker, as to the number and distance of the rails. A $2\frac{1}{2}$ inch auger is recommended, as this with two holes will make a mortise five by two and a half inches. Any ordinary auger will answer, if a crank is affixed to the same. The simplicity and utility of this machine will recommend itself.

PLATE I.

- Fig. 1. Fence.
- Fig. 2. Rails sharpened.
- Fig. 3. Auger with cutters.
- Fig. 4. Holes bored.
- Fig. 5. Post, ditch, and embankment.
- Figs. 6 and 7. Views of the scraper.
- Figs. 8 and 9. Views of the plough.
- Fig. 10. Surface of the ground.

PLATE II.

- Fig. 10. Cheap wood mill.
- Fig. 11. End view of iron mill.
- Fig. 12. Front view of iron mill.
- Fig. 13. Post-boring machine.

PLATE I.

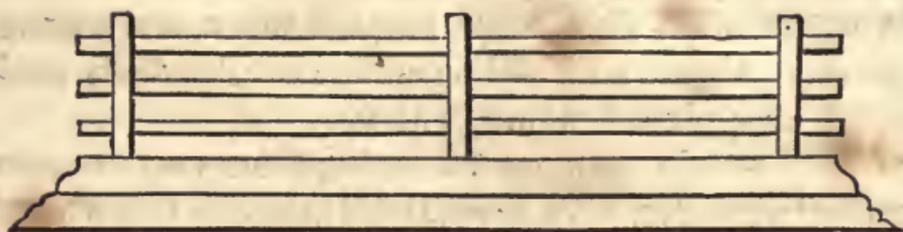
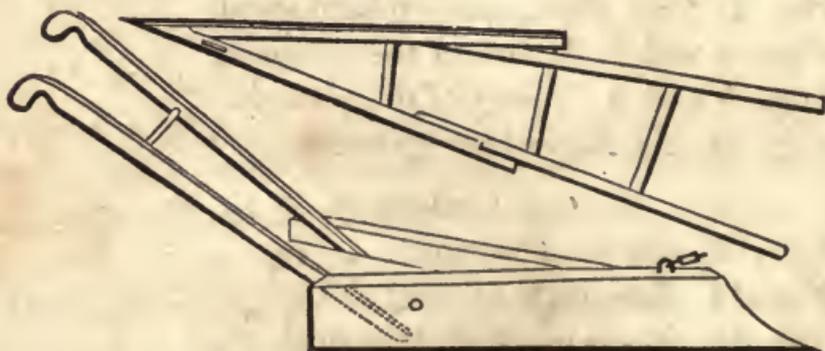
Figure 1.*Figure 2.**Figure 3.**Figure 5.**Figure 4.**Figure 6**Figure 7.*

Figure 8.

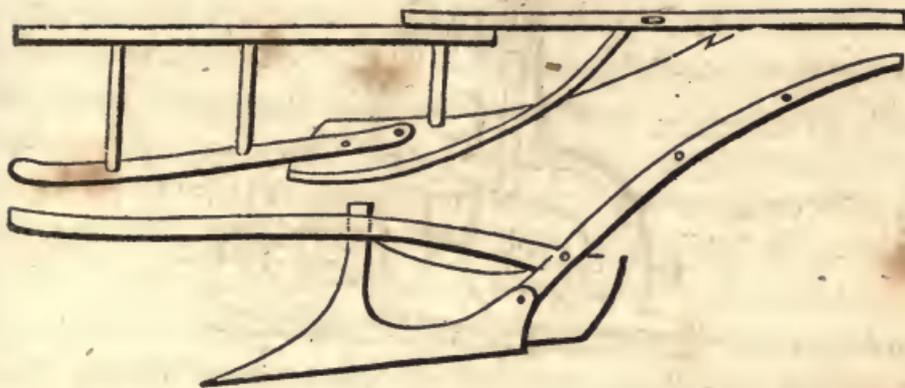


Figure 9.

PLATE II.

Figure 10.

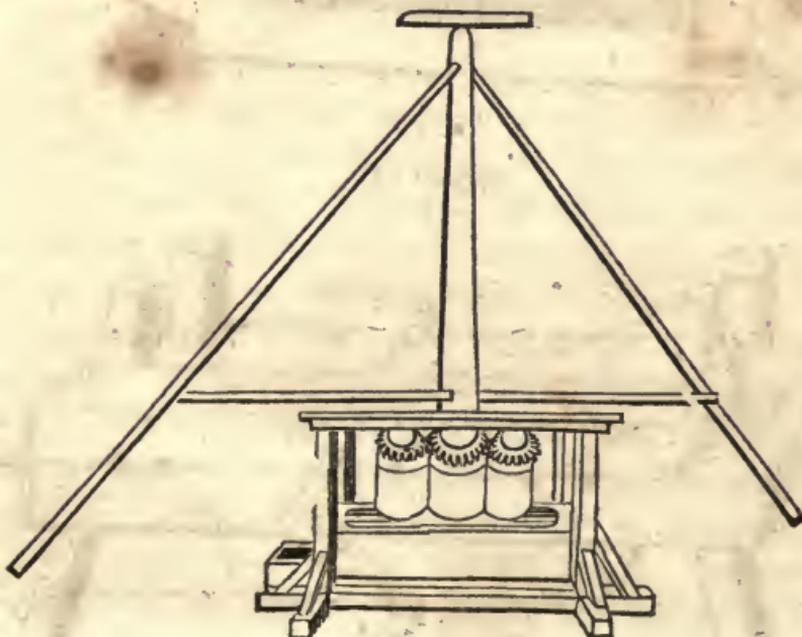


Figure 11.

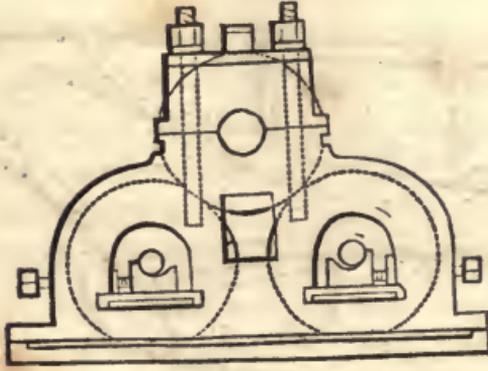


Figure 12.

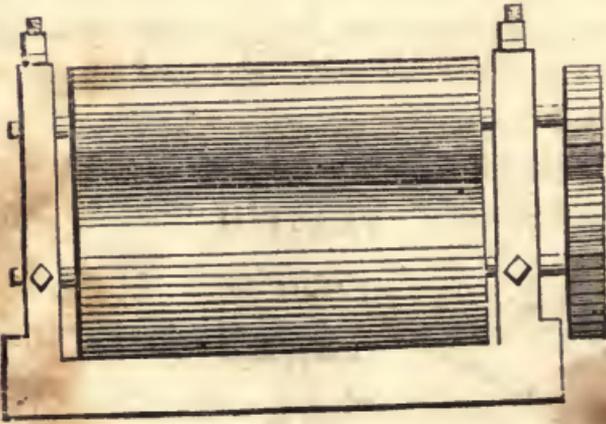


Figure 13.



CHEAP RAIL FENCE, FOR LAND NEWLY CLEARED.

As soon as a piece of land is chopped and cleared, it must be fenced in. This is accomplished by splitting into what are called rails, the lengths or cuts—generally eleven feet long—of black-ash, cedar, oak, elm, white-ash, cherry, or basswood; or, when handy, poles will do in part, though rails are the best, and generally used. Rails made from the pine, maple, and beech, the two latter, are rarely seen. A straight fence of logs is sometimes put up, being logs of any kind, (about from ten to fourteen inches in diameter) cut into lengths of twelve or fourteen feet. The rails are split by the axe, and iron and wooden wedges, with a large mallet or *maul* made of wood. Some cuts, depending of course on their freeness (easiness to split) and size, will yield from ten to fifty rails each. The rail fence is built in a zigzag manner, as follows:

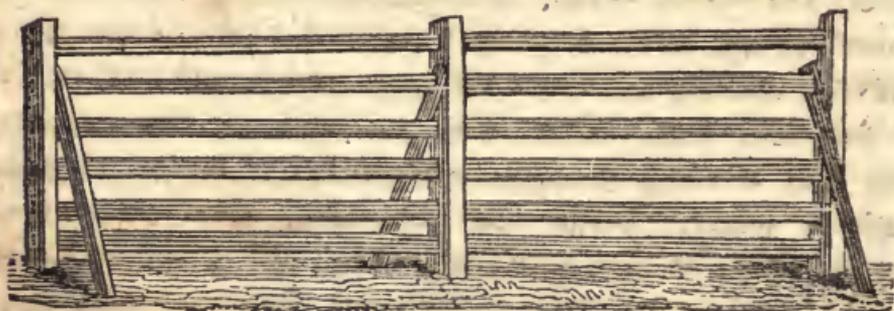


It is generally laid seven rails high, each rail placed above the other, and crossing at the corners, with one stake planted in the ground in the inside, and one on the outside, of each corner; and on these stakes are placed riders, and the fence thus made is strong and steady. From corner to corner is called a "*panel*." Of these rails, and seven high—including two stakes, and two riders, to each panel, as above described—100 rails will lay five rods, or eighty-two and a half feet of a fence, including in this the zigzag; and it will be, to the top of the upper rider, above six feet high. Sometimes in place of stakes and riders, what are called "*lockers*"

are put; but this method, and any other variation, as well as log fences, will be best known on the spot. The above rail, stake, and rider fence is the ordinary one. We need not refer to a brush fence, to protect a crop of grain or potatoes, as it is not worthy the consideration of an industrious settler.

FENCING THE PRAIRIES.

BY JAMES T. GIFFORD.



When a new settler makes a beginning on the prairie, the first object that calls for his attention is fencing. And the first objection raised by an eastern man to the prairies of the West is, that there is not sufficient timber for fencing. Much of this land must lie unoccupied for generations for want of fencing. Now, Messrs. Editors, I am about to submit a plan by which the amount of timber we now have, may be made to go much farther, and also by which good fence may be made of timber raised from the seed, or transplanted, in a few years. Having tried several experiments within the last five years, with a view to make the greatest amount of good fence from a given quantity of timber, and that with the least labor; I have concluded that the following plan of construction, illustrated by the accompanying model, on the scale of one and a half inches to the foot, is decidedly the best I have tried. I make the fence of either sawed or split stuff. Posts and

braces about five feet long, and from two to three inches by five in size, and bars from six to eight feet in length, and from one to one and a half inches by five in size. The posts are mortised, and the bars fitted similarly to the usual manner for post and rail fence, except that one rail, to go next to the upper one, has one end tenoned longer than the others, which passes through the upper end of the brace before entering the post; the brace having its lower end inserted into the ground about eight inches deep, and about one foot and a half from the line of the fence; each post being set in the ground about four inches, and braced alternately on each side; that is, one post is braced from one side, and the next from the opposite side. These keep the fence in an erect position, and sustain it against any pressure, often experienced from wind or cattle. I have fence which has been set in this manner for two years past, and it stands better than any I have ever seen with posts set deep in the ground. Among the advantages of this kind of fence are the following: The stuff being short, much timber can be worked into it which cannot be worked into ordinary rails; and the fence need not be over half the weight of common fence, it not depending on its weight to make it substantial, and being more easily split. The fence will also stand much longer, as where posts depend upon strength at the surface of the ground, and become old and partially decayed, the wind or the crowding of cattle is apt to break them off; while on this plan, the fence being braced near the top, stands firmly, though light; and there being no purchase upon either post or brace, it will stand erect until both are completely decayed.

I bore the posts and braces with a machine by horse power, and tenon the rails with the same. With this machine, fence may be prepared for setting, after the tim-

ber is split or sawed, at an expense of one shilling per rod.

Good substantial fence may be seen on the farm of Hezekiah Gifford, at Elgin, made from locust timber, which he has grown from seed planted seven years ago last May.

Mr. Gifford wishes us to state, what he failed to do, in relation to the *size* of the timber necessary to make the fence of which he treats in this number, that a locust pole, about five inches through, will make two rails—being split through the centre. His object is to convince farmers that it will not be necessary for to wait fifteen or twenty years for rail stuff to grow. Locust timber is easy to work and split, while green; but when seasoned is little less hard than iron, and will split but a little easier—hence it is very valuable for fence, when it is desirable to save timber. Mr. Gifford proposes to make the lengths of his fence about six or eight feet.—*From the Prairie Farmer.*

IMPROVED MODE OF FENCING.

While the cultivation of timber land will be hastened by the new method, heretofore described, of making pot and pearl ashes, where the preservation of wood is not an object of interest, an improved mode of fencing the prairies gives great facilities for converting what has been hitherto deemed almost waste land to immediate use; and when it is considered that, as appears by an estimate made at the land-office, there are in four States and two Territories, 39,000,000 of acres of prairie lands, viz: in Illinois 11,000,000 acres, in Indiana 5,000,000, in Missouri 9,000,000, in Arkansas 4,000,000, in Wisconsin and Iowa, restricted to surveyed lands alone, each, 5,000,000 acres, some of which are quite remote from timber, it must be

matter of congratulation, especially from those States, as also to the United States, still holding portions, to know that such lands can now be inclosed with one-fourth the expense of a Virginia fence. Where a section of 640 acres is inclosed, it may be done at a cost not exceeding forty cents per acre, where the labor and materials are all purchased. The fence now recommended is composed of a ditch and embankment of three feet high, or a fence three feet high on the top of the embankment. The hedge fence so much commended in Europe, will not answer for the prairies, as the weeds grow up with the hedge, and thus furnish much fuel to consume the hedge in its earlier growth, or even in its more matured condition; and this will be the case until general cultivation protects the prairie from annual fires. The ditch, too, of itself alone, is a poor defence against the effect of frost, and the attacks of cattle. A combination of the two seems to offer all the advantages of both, as the soil is drained by the ditch, and the same forms in part the fence, thus saving much timber.

It requires 26,500 rails to inclose a section of land with the Virginia panel equal to eight rails, stake and rider, whereas, it takes only three rails for a panel on the plan of the ditch and embankment; nor is this all, the rails on the embankment need not be over one half the size of those in a Virginia or worm fence. The great saving will be apparent when we reflect, that four panels of Virginia fence are equal in distance to three panels of fence made straight. Three rails on the embankment are sufficient. Hence, nine rails on the latter plan are equal to forty on the former one; and when the difference in the size are taken into consideration, the proportion will not be over four and a half to forty, making a saving in timber, carting and hauling, etc. almost incredible. In

the success of such a plan, the United States are deeply interested; for it must add millions of dollars to the treasury, besides enhancing the value of land now likely to remain a long time without improvement, and saving from destruction the vast quantities of timber which the inclosure of the prairie in the ordinary mode of fencing would require. This plan, having been made the subject of great attention, and found to answer the purpose, can be safely recommended. The machinery to accomplish all this as described will not exceed \$10, and may be constructed by ordinary workmen. Drawings of the plough and scraper, and the machinery of its construction, with a description in full of the manner of making the fence, will be found in Document No. 13. A model, also, of full size, of both the fence as standing and the various machinery, may be seen at the patent-office. A letter from a gentleman at the West, (see Document No. 14,) fully sustains the above opinion of its practicability.

RAIL FENCE.

In many parts of the country, where rocks are not plenty, farmers are obliged to make wooden fences, and the time of cutting them is important. Posts, in particular, in some kinds of soil, are very expensive, as they require to be renewed once in four or five years. In clayey ground, they will stand a dozen years, and in wet meadows fifty. When posts are used, they should never be put in the ground in a green state, notwithstanding they will last longest in wet ground. Constant wet from water will not hurt them, but the fermentation of the natural sap in the wood is injurious. When posts with three rails are wanted, it is good economy to purchase or make them a foot longer than the common length, so as

to admit of their being sharpened at each end. They will last twice as long when so cut; and they cost but a trifle more than the common kind.

Posts are so liable to rot, and break off, that in some parts of the country, where timber is plenty, crooked or worm fences are made of rails without posts. An obtuse angle is made in each length of the fence, and the rails are placed one upon another as children build cob houses; the smallest rails being placed at the bottom, and the largest at the top; five rails are thus placed one upon the other. When heavy rails are placed at the top, they will often remain in place without staking up; but it is more common to set a pair of stakes at each angle, and tie them together at the top, with a withe or a little yoke. The Virginians have very generally used their rails in this manner; and at the north it is called Virginia fence.

In speaking of the importance of letting timber for posts become dry, before it is put into the ground, we ought also to name in connection with it, the importance of suffering the sills of a house and other buildings, to become dry before they are used. It is true we now set buildings higher than we formerly did, and we take smaller timber for sills, and both these practices tend to favor the durability of the timber—yet we are often obliged to put in new sills; and this labor may be saved. In ancient times, the largest sticks of timber that could be found were placed at the bottom, on the principles of pyramid building: it seems to have been supposed that this gave the building strength. And it is not uncommon to find, on pulling down an ancient meeting-house, sills twelve inches square. There was not only no need of such timbers in such a position, but they were not worth half as much as timbers half their size. When the building was set low, the sill would never become

dry, and the sap would ferment in it, until it would cause decay. Many of these old houses are found to have rotten sills. A stick of timber eight inches square is better for any building, as a sill, than a stick twelve inches square; and the first has not half the number of square inches.

SOW BLUE GRASS ON YOUR BANK FENCE.

One of the reasons why sod fence will stand no better, is owing to the fact, that the turf made by the wild grass is not sufficiently tenacious at the surface. The roots of it are tough, but are very large and long. The great proportion of them are perpendicular, and not lateral or horizontal. Consequently, although they form a very strong turf, it is not a turf which holds the earth well, when there is any chance for the rain to act upon it. Blue grass, on the contrary, forms a very thick turf at the surface, which is precisely the place wanted by the covering of a sod fence. The winter is a good time to sow the seed, particularly on the snow, if there should be any.

WHITEWASH YOUR COTTAGES.

Log houses pointed with lime, though apparently tight, admit much wind and water, in consequence of the logs seasoning and shrinking from the lime, or the lime becoming loose from the logs. To make them tight, apply whitewash as thick as can be laid on, which will fill the small cracks and cement the loose mortar to the logs. Salt should be put in the water before slaking the lime in it, which is said to make it hard and durable. Skim-milk or glue, is also thought to be useful.

HEN HOUSES.

If you wish a hen-house that will keep your fowls safe

from their foes, winged or four-footed, elevate it on posts two and a half or three feet above the ground, with a hole underneath through the floor, for them to enter. No animal will jump up into it, or *owl* or *hawk* find the way in. I have known flocks of hens destroyed in a few nights by the *mink*, in roosts built upon the ground, in the ordinary manner.

BUILD BARNES.

A barn will pay for itself in about two years—in this way: you save ten dollars worth of manure, you save twenty dollars worth of fodder, and you save about fifty dollars worth of grain from rotting and wasting from being threshed on the ground, in a year. In two years this amounts to one hundred and sixty dollars, which will build a barn thirty feet by forty. Not only this, it adds a great deal to the comfort of your stock to be kept in a warm barn, in a cold winter night. Neither does it require so much fodder for your cattle when they are kept warm, which is another great saving.

ICE HOUSES.

There is an indifferent, good, better, and best way of doing everything; and judging from the success of ice-keepers, we should suppose the mode of constructing ice-houses had not uniformly been adopted in this country. It is very often the case, that ice is not kept beyond mid-summer. This is owing, in every instance, to the want of requisite information in building houses of materials which are not too great conductors of heat. In beginning to build, it is not only necessary to "count the cost," but it is very important for every one to ask himself, what he wishes to accomplish before he commences, lest his labor be lost. The common plan is, to dig in the earth some

eight or ten feet, and build a house from the bottom, extending from four to ten feet above the surface. The earth and all the materials, on this plan, are too swift conductors of heat to completely secure the ice. The better plan is to construct a building entirely above ground. One house should be built in another, the walls being eighteen or twenty inches asunder, and this space filled with pulverized charcoal or tan bark. The floor should be filled some twelve or fifteen inches, and a layer of tan bark thrown over it to the depth of a few inches. This kind of a floor will completely absorb the moisture and keep the air dry. Rye straw makes an excellent roof. No matter how coarse and cheap the materials are. A good ice-house may be built of *logs*.

THE DAIRY:

COMPRISING

THE MANAGEMENT OF COWS,

MAKING OF BUTTER,

MAKING OF VARIOUS KINDS OF CHEESE,

THE CARE OF A DAIRY,

ETC. ETC. ETC.



CHAPTER V.

THE DAIRY.

IN this department, we shall present such hints and instructions as are entitled to entire confidence. All that follows has been gathered from the best possible sources.

MILKING COWS.

The owners of cows should pay particular attention to milking. Children should not be trusted with this business, and there are many grown people who never milk well, though they have been brought up to the business.

If you would obtain all the milk from the cow, you must treat her with the utmost gentleness; she must not stand trembling under your blows nor under your threats. She may at times need a little chastisement, but at such times you need not expect all her milk.

Soon after the bag has been brushed by your hand, and the ends of the teats have been moistened a little with milk, it flows in rapidly, and all the veins or ducts near the teats are completely filled. Then it must be drawn out immediately or you will not get the whole. You must not sit and talk—you must not delay one moment, if you would have all the cow is then ready to yield.

The udder should be moved in every direction at the close of milking, and the hands may beat it a little, in imitation of the beating which the calf gives it when he is sucking. An expert milker will make the cow give

one quarter more in butter than a majority of grown milkers will.

One season, at Framingham, says an experienced writer, we kept four cows in the home lot; there was but little difference in the quantity of milk given by each. We had a *very steady* hired man of forty years of age; he had carried on a farm in New-Hampshire, and had always been used to milking; but he was so slow the cows had no patience with him.

We milked two of the cows and he the other two, and we were but little more than half as long as he in milking, though we got the largest mess by about one quart. On our remonstrating, that he did not draw out all the milk, he said his cows would not yield so much as those milked by us. We then made an exchange; he milked our two, and we milked his. In three weeks time the case was reversed; our mess exceeded his by nearly one quart. He never failed to strip his cows to the last drop; but his *intolerable moderation* prevented his obtaining what an active milker would have done.

Young learners may practice on cows that are soon to be dried off. They should be taught *at first* how to take hold of the teats, and they will remember it; but how common it is to let each child choose his own mode of milking! Learners should know that the hand should be kept very near the extremity of the teat, if they would milk with ease. The left arm should always press gently against the leg of the cow; for if she is inclined to kick, she cannot, with any force; she cannot *strike* an object that leans against her; but if she raises up her foot, as she often will when her teats are sore, the milker will be ready to ward off and keep it from the pail, much better than when he sits far off from the cow.

If heifers are made tame and gentle by frequent hand.

ling when they are young, they are not apt to kick the milker; their udders should be rubbed gently before calving; it is quite as grateful to them as carding. But if they are suffered to run wild till after they have calved, they cannot be expected to be gentle when you first attempt to milk them: they often acquire bad habits, and are not broken of them through life.

BUTTER-MAKING IN ORANGE COUNTY

THE MILK-ROOM.—It is all-important that this should be *cool, dry, and moderately light*, with a *free circulation of air*. Mine, says a Dutchess county writer, is in the cellar of my farm-house, ventilated by means of two windows about two feet square on the north side, and a like window, and a lattice-door on the south side; all covered on the outside with wire-gauze, fine enough to exclude the flies. The floor is formed by a layer of small stones, six inches deep, well *grouted*, (that is, a mortar of lime and sand, thin enough to run freely, is poured upon the stones until they are entirely covered with it,) and when dry, a thin covering of water-lime cement is put upon it, and made smooth with the trowel. This costs little, if any more than a plank floor, and effectually keeps out both rats and mice; and as water does not injure it, it is easily kept perfectly clean and sweet. The milk-pans stand upon marble-slabs, raised upon brick-work, about two feet from the floor, and the butter is worked upon a marble table. A pump is placed at one end of the room, bringing the water through a lead pipe from the bottom of the well; and the water discharged, runs the whole length of the cellar in a channel prepared for the purpose, when the floor was cemented, and escapes through a fine iron grate, cemented into the floor, over the mouth of the drain. The churn

stands in the milk-room, and is worked by a dog-power machine, on the outside of the building. The milk-room should be used exclusively for dairy purposes.

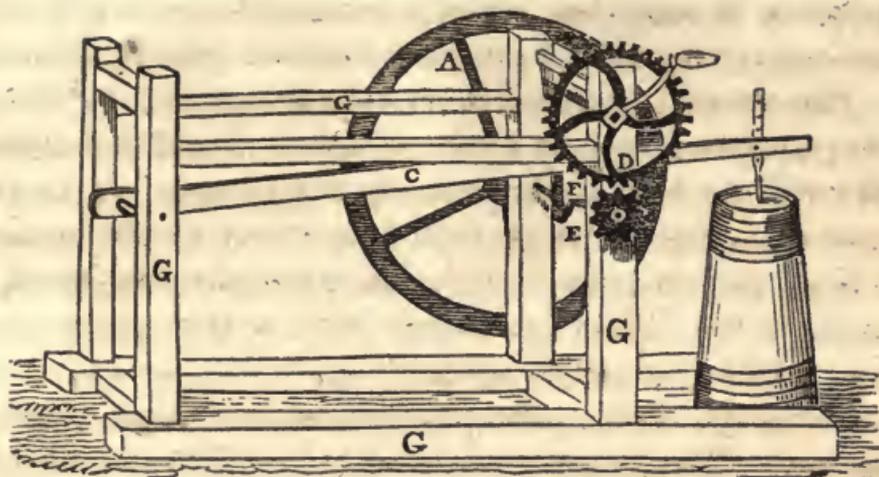
DAIRY UTENSILS.—The cows are milked into wooden pails, not painted on the inside, and kept perfectly sweet. They must be thoroughly cleansed, dried, and aired, morning and evening; and never be used for any other purpose. The pans should be shallow, with sides much more slanting than the usual pattern of pans which we see at the tin-shops, and be kept as bright as silver; they also must be well aired in the sun.

THE MILK.—This must stand in the pans, *undisturbed*, until the whole of the cream has risen; (some of our best dairy-women say until it is "*loppered*," or thick,) both milk and cream are then put into the churn together, at a temperature of about fifty-five of Fahrenheit; the churn is then worked with a rapid stroke, say from 60 to 75 per minute, until the butter "*begins to come*," when the brake is put upon the wheel, and the churn is worked more and more moderately, until the butter is entirely separated from the buttermilk. Upon taking the butter from the churn, it is washed with cold water, salted, and thoroughly worked with a *wooden ladle*, upon the marble table. It must never be worked with the hand, as the warmth of the hand will injure it. It is then set aside in a cool place, until the next day, when it is again, in like manner, worked until every drop of the buttermilk is extracted. It is then fit for packing away, or for use. The butter must at no time be allowed to get soft.

CHURNING MACHINE.

BY JAS. M. THOMAS.

A, fly-wheel, may be made of oak plank or any heavy timber. C, lever to which the churn-dash is attached.



D, gearing, which may be common fanning-mill gearing. F, pitman which communicates the motion of the crank E to the lever C, which is attached to the back part of the frame G. The crank should be three inches from centre, so that it may perform a circle of six inches. By attaching this machine to dog or sheep-power, cog-wheels will be unnecessary, as the shaft of a sheep or dog-power may be fastened to the crank. The cost of this machine is \$6, without the churn. These machines are of my invention and construction, and are not patented.

Wyoming, Stark Co., Ill., Feb. 17, 1844.

VERMONT BUTTER.

The county of Caledonia, in Vermont, has long been celebrated for its dairies, and its butter and cheese have frequently taken large prizes at Agricultural fairs.

In the dairy of Mr. W. Backop, who has obtained five premiums at Boston, for butter; two of \$100 each, and three of \$50 each; the milk in warm weather stands thirty hours before the cream is taken from it; and in cold weather, forty-eight hours. In the hot season, in this dairy, six pounds of salt are allowed to one hundred pounds of butter, and in cold weather four pounds. No

saltpetre is used, but about a pound of finely powdered loaf-sugar is sprinkled into each hundred pounds of butter.

The cream is churned in the old-fashioned wooden hand churn, worked in cold water, which is repeatedly drained off until the buttermilk entirely disappears. It is then packed in firkins, which hold from thirty to fifty pounds. It is packed so as to be very solid, and the surface of the butter in the firkin is covered with a thin white cloth, over which fine salt is spread.

Caledonia butter always commands a high price in market. The summer yield of butter from one common cow, varies from one hundred to one hundred and twenty-five pounds each, taking an average of heifers and cows.

It is important that every particle of buttermilk be worked out. *But it is equally important that the butter be not overworked*, as it leaves it tough, and stringy, and sticky.

The importance of making good butter is so great, that no apology is necessary for subjoining the statements of some celebrated butter-makers, as recorded in the transactions of the New-York State Agricultural Society. Much valuable information will be gained, by carefully reading them.

MR. LANSING'S STATEMENT.

1. The number of cows kept is ten.
2. Keep them stabled through the inclement season ; feed them from three to four times per day with good hay or green stalks ; when near coming in, add some oats, barley, or corn cracked. In summer, good pasture, with living water accessible at all times, and plenty of salt.
3. Treatment of milk and cream before churning. Strain the milk in tin pans ; place them in a cool cellar for the cream to rise. When sufficiently risen, separate

the cream from the milk ; put it in stone jars, well prepared, before churning.

4. The mode of churning in summer. Rinse the churn with cold water ; then turn in the cream, and add to each jar of cream put in the churn full one-fourth of the same quantity of cold water. The churn used is a patent one, moved by hand with a crank, having paddles attached, and so constructed as to warm the milk, if too cold, with hot water, without mixing them together. The milk and cream receive the same treatment in winter as in summer ; and in churning, use hot instead of cold water, if necessary.

5. The method of freeing the butter from the milk, is to wash the butter with cold water till it shows no color of the milk, by the use of a ladle.

6. Salting of the butter. Use the best kind of Liverpool sack salt ; the quantity varies according to the state in which the butter is taken from the churn ; if soft, more, if hard, less, always taking the taste for the surest guide. Add no saltpetre, nor other substances.

7. The best time for churning is the morning, in hot weather, and to keep the butter cool till put down.

8. The best mode of preserving butter in and through the summer and winter, is as follows : The vessel is a stone jar, clean and sweet. The mode of putting it down is to put in a churning of butter, and put on strong brine ; let it remain on until the next churning is ready to put down, and so on till the jar is filled ; then cover it over with fine salt, the same to remain on till used.

JACOB T. LANSING.

Watervliet, Jan., 1842.

MR. MERRIFIELD'S STATEMENT.

Number of cows. Eight.

Mode of keeping. In pasture, in summer; on hay, straw and roots, in winter.

Treatment of cream and milk. Milk strained into tin pans, and placed in the cellar.

Mode of churning. The cream only churned, in a Dutch churn.

Method of freeing the butter from the milk. By pressure.

Quantity and kind of salt. Liverpool sack, one ounce to the pound.

Best time of churning. Morning, in summer.

Best mode of keeping. In the cellar, in summer, in wood.

In winter, our milk stands twelve hours; is then removed to the stove, and scalded over a slow fire to near boiling heat; the pans removed to the cellar to cool; the cream only churned. The butter, placed in the coldest part of the house, will keep good any length of time.

WILLIAM MERRIFIELD.

Guilderland, Jan., 1842.

MR. LYON'S STATEMENT.

To the Committee for the Examination of Butter:

In submitting to your consideration the following report, I would remark, that at the time of my leaving home, I had no intention of entering the list of competitors, and that the tub of butter exhibited for your inspection was manufactured without any reference whatever to this exhibition; was made during my absence from home, in our ordinary way of making butter. My soil, part sand, heavy pine ridge, on which clover grows luxuriantly, and part black loam, and part clay, nearly equal in propor-

tion, sloping westwardly. With the exception of five or six weeks in the season, water may be found plenty in my pastures; during the dry seasons, my cows have access to water morning and evening, and at midday, if they choose. My hours for milking are very regular, viz: commencing at early light in the morning, and in time to get through before dark in the evening. My dairy numbers twenty cows, seven of which were milked for the first time this season; their age three years old; the ages of the remainder average from five to ten years. I fattened all my calves to the age of six weeks. The latter part of winter, and through the spring, my cows are fed about one peck of ruta-bagas each; salted regularly once a week in winter, and twice in summer. I think salting regularly, as often as above stated, to be very essential, as conducive to good health; and during the milking season, it tends to produce a uniformity in the quantity of milk, and in my estimation adds, in no small degree, to the quality of the milk. The average product of my cows this season is 100 lbs. per cow, besides what I have used in a family of from eight to ten persons. My milk-house is what is termed a plank building, clap-boarded; ceiled about three feet from the floor; the remainder of the room lathed and plastered. My shelves about six inches wide and five between, so constructed as to admit a free circulation of air. My buildings are on a rise of ground of sufficient height, so as not to require drains to my cellars. I have a cellar under my milk-house the entire size of my building, with wall of round stone, laid without mortar, to the depth of six feet. In the centre of the building, I have a place about three feet square, to admit the cool air from the cellar, over which I have a table, where the milk is strained, butter worked, etc. The milk I require to be strained as soon as pos-

sible after milking, in tin pans, about three quarts to each pan ; it stands until the milk is slightly turned, the time required depending on the temperature of the weather.

Churning performed every day, (Sundays excepted.) I would here remark, when cows are regularly salted, as I have before stated, I have never known an instance of any extreme difficulty in obtaining butter. After it is obtained, it is immediately taken from the buttermilk, all the milk worked off that is practicable at the time, (which in some respect depends upon the temperature of the weather,) salted to the taste, and placed in a cool cellar until the next day, when the buttermilk is entirely worked out by the use of a ladle, and then packed solid in tubs.

The kind of salt I use is obtained in Albany, and goes by the name of sack salt, sold in parcels weighing from 200 to 300 lbs. After the tub is filled, the butter is kept covered with brine sufficient to keep the air entirely excluded, especially that made during the warm part of the season. My tubs are placed in the coolest part of my cellar. Butter made and protected in this way, I have no hesitation in saying, will keep sweet one, two, or three years.

CHARLES LYON.

Oswegatchie, St. Lawrence Co., Jan., 1842.

REPORTS ON CHEESE.

MESSRS. ALLEN'S STATEMENT.

Number of cows kept, eleven. Cheese made from two milkings, in the English manner ; no addition made of cream. For a cheese of twenty pounds, a piece of rennet, about two inches square, is soaked about twelve hours in one pint of water. As rennets differ much in quality, enough should be used to coagulate the milk *sufficiently* in about forty minutes. No salt is put *into* the cheese,

nor any on the outside during the first six or eight hours it is being pressed; but a thin coat of fine Liverpool salt is kept on the outside during the remainder of the time it remains in press. The cheeses are pressed forty-eight hours, under a pressure of seven or eight cwt. Nothing more is required but to turn the cheeses once a day on the shelves.

H. P. & G. ALLEN.

Duanesburgh, Jan. 17, 1842.

MR. MARVIN'S STATEMENT.

The milk strained in large tubs over night; the cream stirred in milk, and in morning strained in same tub; milk heated to natural heat; add color and rennet; curd broke fine and whey off, and broke fine in hoop with fast bottom, and put in strainer; pressed twelve hours; then taken from hoop, and salt rubbed on the surface; then put in hoop, without strainer, and pressed forty-eight hours; then put on tables, and salt rubbed on surface, and remain in salt six days, for cheese weighing thirty pounds. The crushings are saved, and set and churned, to grease the cheese. The above method is for making one cheese per day.

DANIEL MARVIN.

Cooperstown, January, 1842.

MR. HARDY'S STATEMENT.

The number of cows kept is thirty-eight. Cheese made from two milkings—no addition of cream. The quantity of salt used was one teacup-full to twenty pounds of curd, of common Onondaga salt. The rennet was prepared by soaking one rennet in a jar of five or six quarts filled with salt and water. From one pint to one quart was used, according to the strength of the rennet. The cheeses

were pressed in a common wheel and lever press, and pressed two days. The cheeses were taken from the press, and rubbed with annatto, soaked in strong ley; then rubbed with whey butter, and turned and rubbed daily through the season with the same.

PHINEAS HARDY.

Le Ray, Jefferson Co., Jan. 10, 1842.

CHEESE MAKING.

Mr. A. F. Bill, in the October number of the New Genesee Farmer, says:—"In the morning take off the cream with a skimmer, and put it in a vessel by itself; then warm the milk, or a part of it, over a slow fire till about blood heat; then pour in the cream, and stir it moderately till there are no particles to be seen floating upon the surface."

It seems to me evident, that when the cream is once separated from the milk, it can never be so thoroughly incorporated with it again, as to set the milk as soon as taken from the cow.

Our method is this: Immediately after the cows are milked at night, (and the quicker the operation is performed the better,) we strain it into the cheese-tub and put in the rennet—as the milk when it first comes from the cow is in precisely the right temperature to set. If the rennet is good, and properly prepared, a large table-spoonful is sufficient for a pail-full of milk. The tub should then be covered with a cloth and allowed to stand undisturbed—in about forty minutes it will coagulate. It is then carefully cut, the tub again covered and left to stand till morning. When the tub is wanted for the morning's milk, the night's curd is dipped into the cheese-basket, or cheese-sink, to drain, and the morning's milk strained into the same tub. The rennet is then put on, going through the same process as with the night's milk.

When sufficiently drained, the two curds are ready to be put together, scalded and salted according to the discretion of the maker.

Those who have had the least experience in the management of milk, must know that warming it after it has once cooled, gives it a tendency to sour the quicker. Any person who will take the trouble to try the experiment, will find that curd, made from milk warm from the cow, will keep *sweet* much longer than that which has been warmed over the fire ; and, besides this, it saves the time and trouble of *skimming* and warming. Nothing will make a good cheese-maker assume a belligerent attitude so quick, as to see the skimmer flourished over the cheese-tub.

From a long experience in a moderate sized dairy, I am persuaded that in no way can so much, or cheese of so good quality be made, as to set the milk while warm from the cow.

THE EMIGRANT CHEESE.

The following improved method of making cheese is from the Portland Transcript. We shall only say, in addition to the remarks therein offered, that the process, as described by the writer, has been repeatedly tried with flattering success to the emigrant. Cheese made in this way, possesses many and important advantages, inasmuch as it requires no hoops nor press.

NEW METHOD OF MAKING CHEESE.

We have lately seen a method of making cheese, which is worthy of being tested by experiment at this season of the year, especially by those who have but a small quantity of milk. It is very simple, and easily tried. The milk is SET in the ordinary way every morn-

ing, and the curd separated from the whey as well as can be with the hands. It is then pressed compactly into the bottom of an earthen pot, and covered over with several folds of dry linen, or cotton cloth. By this process the remaining whey is absorbed, and when the cloth becomes saturated it is removed, and a dry one placed in its stead. In the course of the day and night, this process removes the whey as thoroughly as it can be done by pressing. The next morning the milk is prepared in the same manner, and the curd packed closely upon the top of that prepared the day previous; and the same method pursued in separating the moisture. This process is repeated till you have a *cream-pot full of cheese*. It is thus seen to be a convenient method where the dairy woman has the milk of but one or two cows. If it work well, it is an important discovery. If it fail, it need not be a very disastrous failure. It is a very successful way of preserving the cheese from flies and mice, as it can be perfectly inclosed and kept from such gentry, and from the air and light. We have seen but one experiment of this kind, and this promises to be a successful one. The cheese appeared as free from moisture, and as solid as that made by the press. The labor is much less, and the care of it afterward is comparatively nothing.

TO MAKE SAGE CHEESE.

Take the tops of sage, and press the juice from them by beating in a mortar; do the same with leaves of spinach, and mix the two juices together. After putting the rennet to the milk, pour in some of this juice, regulating the quantity by the color and taste to be given to the cheese. As the curd appears, break it gently and in an equal manner; then, emptying it into the cheese-vat, let

it be a little pressed, in order to make it eat mellow. Having stood for about seven hours, salt and turn it daily for four or five weeks, when it will be fit to eat. The spinach, besides improving the flavor and correcting the bitterness of the sage, will give a much finer color than can be obtained from sage alone.



HOUSEHOLD DEPARTMENT.

COMPRISING

COOKERY, PICKLING, MAKING SOAP,

MAKING CLOTH,

DYEING,

ETC. ETC ETC.

ROBERTSON'S PATENT

COMBINATION OF THE

IN A SINGLE

SYSTEM

CHAPTER VI.

WEIGHT AND MEASURE

As all families are not provided with scales and weights, we subjoin a list of weights and measures.

DRY MEASURE.

Wheat flour.....one pound is.....one quart.
Indian meal.....one pound, two ounces, is...one quart.
Butter, when soft.....one pound, one ounce, is....one quart.
Loaf-sugar, broken.....one pound is.....one quart.
White sugar, powdered....one pound, one ounce, is . . one quart.
Best brown sugar.....one pound, two ounces, is...one quart.
Eggs.....ten eggs are.....one pound.

LIQUID MEASURE.

Sixteen large table-spoonfuls are.....half a pint.
Eight large table-spoonfuls are.....one gill.
Four large table-spoonfuls are.....half a gill.
A common-sized tumbler holds.....half a pint.
A common-sized wine-glass.....half a gill.

HOW TO MAKE BREAD.

Bread is the most important article for daily use ; and great pains should be taken in making it. There are few good bread-makers, and a few hints may be useful.

A bushel of good wheat will make fifty-six pounds of flour, besides the bran and middlings. If you get your wheat ground at a custom-mill, always weigh it. The toll usually taken for grinding at custom-mills, is one-tenth. It varies slightly from this in some places, but not materially.

Adulterated flour can be tested as follows: If there be *whiting* in it, dip the ends of the fore-finger and thumb in sweet oil, and take up a small quantity of flour between them. If it be pure, it will turn nearly black; if *whiting* be in it, it will not change color.

Plaster of Paris in flour, can be detected by dropping a little sharp vinegar on it; if it is pure, it will not effer-vesce.

Another good way to test the purity of flour, is to take a handful of it, and squeeze it tightly together. If it is good, it will retain the form which the squeezing gave it. Sour or musty flour can be known by the smell.

Having good flour, there is no excuse for not making good bread, for it is a very simple process. **GOOD YEAST** is all-essential; and we shall now tell the reader how to make it. There are two or three kinds, equally good—as follows:

HOP YEAST.

Take two quarts of water, one handful of hops, two tea-cups wheat flour; boil these together about half an hour, and while it is boiling-hot, pour it upon a sufficient quantity of wheat or rye flour to make a stiff paste or batter; let it stand until blood-warm, when you must add half a pint of yeast, two large spoonfuls of molasses, or brown sugar if you have it, and stir the whole well; set it in a cool place in summer, and a warm one in winter; when perfectly light (which is the case when it looks

frothy) and cold, it should be put in a clean jar or bottle, but not filled or tightly corked, until thoroughly worked, which will be by the next day; then cork it tightly, and it will keep ten or twelve days. It is considered, by some housekeepers, a great deal of trouble to prepare yeast so often. This can be obviated by using the following, for

HARD YEAST.

Take six quarts of water and one quart of hops; boil them together until only two quarts remain; then strain the liquid, and add sufficient flour or rye-meal to make a stiff batter, while boiling-hot. When nearly cool, add half a pint good yeast, and let it stand a few hours until perfectly light. You may then add sifted Indian meal, until of a consistency to roll out into cakes. Roll out, until about half an inch thick, and cut in strips two inches wide; then cut in cakes three inches long, and lay upon boards previously dusted with a little flour, and prick them with a fork. They can then be set in a clean dry chamber, where they will be exposed to the sun and air to dry, or put into the oven two or three times, after the bread is drawn out. When perfectly dry, put them into a bag, and hang it up in a cool dry place.

Two cakes will make sufficient yeast for a peck of flour. They should be broken into a pint of lukewarm water, together with a large spoonful of flour, the night before wanted for use, and kept in a place moderately warm

MILK YEAST

This yeast is made quicker than any other, and is preferred by many. Take a pint of new milk, and stir in a tea-spoonful of salt and a large spoonful of flour. Set this by the fire where it will keep lukewarm, and it will

be ready for use in an hour. Twice the quantity of this yeast is required; and it must be used as soon as it is light, which will be the case when it looks frothy, and the bread baked immediately. Bread made of this dries soon, but is very good.*

Having got good yeast, the next steps are as follows: For a family of four or five persons, where the baking is done but once a week, take twenty-one quarts of flour, (which will weigh twenty-one pounds;) put it into a pan or trough large enough to hold double the above quantity of flour. Make a deep hole in the middle of the flour; pour into it a half pint of the hop yeast described above, having previously mixed the yeast in a pint of lukewarm water well stirred; then with a spoon stir into this liquid as much of the surrounding flour as will make a thin batter. This will leave a large part of the whole mass of flour perfectly dry, with a small island of soft batter in the centre. This is called "*setting the sponge.*" Sprinkle on the top of this "sponge" a little dry flour. Then cover the whole over with a warm cloth, either flannel or thick cotton, and set it by the fire in winter, or where the sun is shining in summer. The *leaven* contained in the batter will thus be spread to all the flour.

Let the whole mass stand till it has swelled and risen, so as to form cracks on the outside; then scatter over it two table-spoonfuls of fine salt.

The next step is to make the mass into *dough*. This is done as follows: Take four quarts of soft water, as warm as milk in summer, a little warmer than milk if in winter; add the water by degrees to the flour till it is all thoroughly moistened, stirring it with your hands. Now knead it with your fists till it becomes smooth and stiff, and that not a particle of it will *stick* to your hands. Do

* To make *Potato Yeast*, see page 163. For *Hungarian Yeast*, see index

not leave off kneading while it is in the least degree sticky. On this depends the quality of the bread.

Then make the whole mass into a lump in the middle of the trough or pan, and sprinkle it over with flour. Cover it with a warm cloth, and, if it be winter, place it near the fire. It will now begin to swell, and in an hour or less it will be at its height.

Now is the time to make into loaves for baking. This is done by dividing it into as many loaves as you want, say seven if you please; put these on well-floured tin or earthen plates, and put immediately into the oven. Some people put the loaves directly upon the oven floor, without using plates. If you do so, sweep the oven floor well.

It is a good rule to put the fire in the oven *when the dough is made up*. The oven will be ready just about in time, if the wood is dry and good. To tell whether the oven is too hot, sprinkle a little dry flour on the bottom; if the flour burns black at once, wait a few minutes till it cools.

You can tell when it is hot enough by the color of the bricks at the sides and top. If these be *clear from smoke* the oven is heated sufficiently.*

While the loaves are in the oven, it must be shut up and kept tight; occasionally taking a peep in to see that all is right. It will usually take an hour and a half, or two hours to finish the baking. Your eye will tell you about when to take the loaves out of the oven.

You will get about twenty-eight pounds of bread from the twenty-one quarts (or pounds) of flour. The water adds this weight to it.

This recipe may be depended on. If followed, a family is *certain* of having good bread.

* Cooking-stove ovens often brown the bread, by the plate getting too hot; spread a layer of ashes over the bottom of the oven, and it will prevent it. This is decidedly better than putting in bricks.

Of course, a smaller family than five persons will not require so large a baking. The same proportions of flour, yeast, and water, should be observed in a smaller baking.

BISCUIT.

A very good kind of family biscuit can be made in the same way as the bread, by using a less quantity and only adding a little shortening, either of butter or lard—a table-spoonful of lard, or two of butter, will be sufficient for as much dough as will make a large loaf of bread, and that will suffice for a family breakfast or supper.*

ANOTHER BUISCUT.—One cup shortening, four cups milk, warmed together; half a cup yeast, flour to make it stiff.

QUICK BISCUIT.—One quart sour cream, a large tea-spoonful saleratus, a little salt, and flour enough to make a paste stiff enough to roll. This can be baked in a spider on a few embers.

If you have some milk or buttermilk, you can make them very nice by rubbing a small bit of shortening into the flour and mixing with the milk, as in the foregoing you use the cream.

BREAD MADE OF WOOD.

In times of great scarcity, and where famine threatens, it is well to know how to prepare a nutritious substance, which may go under the name of *bread*, from the *beech* and *other woods destitute of turpentine*.

Take green wood, chop it into very small chips; or make it into shavings, which is better. Boil these three or four times, stirring them very hard during boiling.

* This dough may be used to make good common dough-nuts, by adding to it a little allspice and molasses, or sugar; and fry, after having been left to rise the second time

Dry them, and then reduce them to powder if possible; if not, as fine as you can. Bake this powder in the oven three or four times, and then *grind it* as you would corn. Wood thus prepared acquires the smell and taste of corn-flour. It will not ferment without the addition of leaven. The leaven prepared for corn-flour, is the best to use with it.

It will form a spongy bread, and when much baked with a hard crust, is by no means unpalatable.

This kind of flour boiled in water and left to stand, forms a thick, tough, trembling jelly, which is very nutritious, and in time of great scarcity in frontier countries, may be resorted to to preserve life, with perfect confidence.*

INDIAN CORN CAKE.

Indian corn is very much used in the United States, and is an excellent bread-stuff. It is called *maize* in the old country. The following recipe will make a good substitute for bread, and is very easy to be made.

Take one quart of sifted Indian meal, two table-spoonfuls of molasses, two tea-spoonfuls of salt, a bit of shortening, (lard or butter,) half as big as a hen's egg; stir these together; make it pretty moist with scalding water, put it into a well greased pan, smooth the surface, and bake it brown on both sides before a quick fire.

A rich kind of Indian cake may be thus made: Take one egg to a half-pint of milk, put in two table-spoonfuls of molasses, a little ginger or cinnamon; stir into this

* The writer of these pages believes the *taro* root of the Sandwich Islands, which forms the great staple of food for the natives, to be the *wild turnip* of the American woods. The latter is poisonous in an uncooked state, and so is the *taro*.

The writer has himself eaten of the cooked taro, (called *poe* in its prepared state) at the Sandwich Islands, and can testify to its palatableness and nutritiousness. In the next edition of this work, the matter will be properly noticed.

mixture sufficient Indian meal to make it thick enough to pour. Take a bake-kettle or spider, grease it, pour the cake in, cover it and bake it half an hour or more, according to circumstances, which can be judged by the eye. Sour milk is good to use in mixing this cake, instead of water. A tea-spoonful of dissolved pearlash will make the milk sweet, and must be used.—*Mrs. Child.*

PIES, & c.

THE greatest possible cleanliness and nicety should be observed in making pastry. The slab or board, pastrollers, tins, cutters, stamps, everything, in fact, used for it, and especially the hands, (for these last are not always so scrupulously attended to as they ought to be,) should be equally free from the slightest soil, or particle of dust. The more expeditiously the finer kinds of crust are made and despatched to the oven, and the less they are touched, the better. Much of their excellence depends upon the baking also; they should have a sufficient degree of heat to raise them quickly, but not so fierce a one as to color them too much before they are done, and still less to burn them. The oven-door should remain closed after they are put in, and not removed until the paste is *set*. Large raised pies require a steadily sustained, or, what is technically called, a soaking heat; and to ensure this, the oven should be made very hot, then cleared, and closely shut from half to a whole hour before it is used, to concentrate the heat. It is an advantage in this case to have a large log or two of cord-wood burned in it, in addition to the usual firing.

In mixing paste, the water should be added gradually, and the whole gently drawn together with the fingers,

until sufficient has been added, when it should be lightly kneaded until it is as smooth as possible. When carelessly made, the surface is often left covered with small dry crumbs or lumps; or the water is poured in heedlessly in so large a proportion that it becomes necessary to add more flour to render it *workable* in any way; and this ought particularly to be avoided, when a certain weight of all the ingredients has been taken.

VERY GOOD LIGHT PASTE.

Mix with a pound of sifted flour six ounces of fresh, pure lard, and make them into a smooth paste with cold water; press the buttermilk from ten ounces of butter, and form it into a ball, by twisting a clean cloth round it. Roll out the paste, put the ball of butter in the middle, close it like an apple-dumpling, and roll it very lightly, till it is less than an inch thick; fold the ends into the middle, dust a little flour over the board and paste-roller, and roll the paste thin a second time; then set it aside for three or four minutes in a very cool place, give it two more *turns*, as they are technically called, and after it has again been left a few minutes, roll it out twice more, folding it each time in three. This ought to render it fit for use. The sooner this paste is sent to the oven after it is made, the lighter it will be: if allowed to remain long before it is baked, it will be tough and heavy.

Flour, 1 lb. ; lard, 6 ozs. ; butter, 10 ozs. ; little salt.

ENGLISH PUFF-PASTE.

Break lightly into a couple of pounds of dried and sifted flour, eight ounces of butter; add a pinch of salt, and sufficient cold water to make the paste; work it as quickly and as lightly as possible, until it is smooth and pliable;

then level it with the paste-roller till it is three-quarters of an inch thick, and place regularly upon it six ounces of butter in small bits; fold the paste like a blanket-pudding, roll it out again, lay on it six ounces more of butter, repeat the rolling, dusting each time a little flour over the board and paste; add again six ounces of butter, and roll the paste out thin three or four times, folding the ends into the middle.

Flour, 2 lbs. ; little salt ; butter, 1 lb. 10 ozs.

If very rich paste be required, equal portions of flour and butter must be used ; and the latter may be divided into two, instead of three parts, when it is to be rolled in.

CREAM PASTE.

(*Very good.*)

Stir a little fine salt into a pound of dry flour, and mix gradually with it sufficient very thick sweet cream, to form a smooth paste ; it will be found sufficiently good for common family dinners, without the addition of butter ; but to make an excellent crust, roll in four ounces in the usual way, after having given the paste a couple of *turns*. Handle it as lightly as possible in making it, and send it to the oven as soon as it is ready ; it may be used for fruit tarts, *cannelons*, puffs, and other varieties of small pastry, or for good meat-pies. Six ounces of butter to the pound of flour will give a *very rich* crust.

Flour, 1 lb. ; salt, 1 small saltspoonful, (more for meat-pies ;) rich cream, $\frac{1}{2}$ to $\frac{3}{4}$ pint ; butter, 4 ozs. ; for richest crust, 6 ozs.

FLEAD CRUST.

Flead is the provincial name for the leaf, or inside fat of a pig, which makes excellent crust when fresh, much finer, indeed, than after it is melted into lard. Clear it quite from skin, and slice it very thin into the flour; add sufficient salt to give flavor to the paste, and make the whole up smooth and firm with cold water; lay it on a clean dresser, and beat it forcibly with a rolling-pin, until the flead is blended perfectly with the flour. It may then be made into cakes with a paste-cutter, or used for pies, round the edges of which a knife should be passed, as the crust rises better when *cut* than if merely rolled to the proper size. With the addition of a small quantity of butter,* which should be rolled in after the paste is made, it will be found equal to fine puff-crust, with the advantage of being more easy of digestion.

COMMON SUET-CRUST FOR PIES.

In many families this is preferred both for pies and tarts, to crust made with butter, as being much more wholesome; but it should never be served, unless especially ordered, as it is to some persons peculiarly distasteful. Chop the suet extremely fine, and add from six to eight ounces of it to a pound of flour, with a few grains of salt; mix these with cold water into a firm paste, and work it very smooth. Some cooks beat it with a paste-roller, until the suet is perfectly blended with the flour; but the crust is lighter without this. In exceedingly sultry weather, the suet, not being firm enough to chop, may

* Six ounces of flead, with two of butter, to the pound of flour, will make good common crust; half as much again, with the same weight of flour, *excellent* crust; a teaspoonful of salt will be required with either.

be sliced as thin as possible, and well beaten into the paste after it is wetted.

Flour, 2 lbs. ; beef or veal kidney-suet, 12 to 16 ozs. ; salt, (for fruit-pies,) $\frac{1}{4}$ teaspoonful, for meat-pies, 1 teaspoonful.

VERY SUPERIOR SUET-CRUST.

Strip the skin entirely from some fresh veal or beef kidney-suet, chop, and then put it into the mortar, with a small quantity of pure-flavored lard, oil, or butter, and pound it perfectly smooth ; it may then be used for crust in the same way that butter is in making puff-paste, and in this form will be found a most excellent substitute for it, for *hot* pies or tarts. It is not quite so good for those which are to be served cold. Eight ounces of suet pounded with two of butter, and worked with the fingers into a pound of flour, will make an exceedingly good short crust, but for a very rich one, the proportion must be increased.

Good short crust : flour, 1 lb. ; suet, 8 ozs. ; butter, 2 ozs. ; salt, $\frac{1}{2}$ teaspoonful. Richer crust : suet, 16 ozs. ; butter, 4 ozs. ; flour, $1\frac{1}{2}$ lb. ; salt, 1 small teaspoonful.

A COMMON CHICKEN PIE.

Prepare the fowls as for boiling, cut them down into joints, season them with salt, white pepper, and nutmeg or pounded mace ; arrange them neatly in a dish bordered with paste, lay amongst them three or four fresh eggs, boiled hard, and cut in halves, pour in some cold water, put on a thick cover, pare the edge, and ornament it, make a hole in the centre, lay a roll of paste or a few leaves round it, and bake the pie in a moderate oven from an hour to an hour and a half. The back and neck bones

may be boiled down with a bit or two of lean ham, to make a little additional gravy, which can be poured into the pie after it is baked.

PUDDING-PIES.

This form of pastry (or its name, at-least) is, we believe, peculiar to the county of Kent, where it is made in abundance, and eaten by all classes of people during Lent. Boil for fifteen minutes, three ounces of ground rice in a pint and a half of new milk, and when taken from the fire, stir into it three ounces of butter, and four of sugar; add to these six well-beaten eggs, a grain or two of salt, and a flavoring of nutmeg or lemon-peel at pleasure. When the mixture is nearly cold, line some large patty-pans or some saucers with thin puff-paste, fill them with it three-parts full, strew the tops thickly with currants which have been cleaned and dried; and bake the pudding-pies from fifteen to twenty minutes, in a moderate oven.

Milk, $1\frac{1}{2}$ pint; ground rice, 3 ozs. : 15 minutes. Butter, 3 ozs. ; sugar, $\frac{1}{4}$ lb. ; nutmeg or lemon-rind ; eggs, 6 ; currants, 4 to 6 ozs. : 15 to 20 minutes.

PUDDING-PIES.

(A commoner kind.)

One quart of new milk, five ounces of ground rice, butter, one ounce and a half, (or more,) four ounces of sugar, half a small nutmeg, grated, a pinch of salt, four large eggs, and three ounces of currants.

FRUIT PIES.

Fruit pies are generally made with plain paste, and require but little seasoning. All small fruits, such as rasp-

berries, currants, cherries, and gooseberries, require the addition of sugar and water only. Apple pies, when made of ripe fruit, are best made by putting the lower crust into the plate, and then slicing the apples upon it. Then cover the apples with the upper crust, and bake. As soon as the pies are taken from the oven, entirely remove the upper crust, and sweeten the pie with sugar, and flavor it with grated nutmeg, or whatever else you prefer. A piece of butter added (of the size of a nutmeg to each pie) is a great improvement.

Dried fruit and cranberries should be stewed with a little water, and allowed to get cool before being made into pies.

Peaches and plums should be stoned and cut in halves: they require the addition of a little water, as do most kinds of fruit.

MINCE-MEAT, FOR MINCE PIES.

To one pound of an unsalted ox-tongue, boiled tender and cut free from the rind, add two pounds of fine stoned raisins, two of beef kidney-suet, two pounds and a half of currants well cleaned and dried, two of good apples, two and a half of fine Lisbon sugar, from half to a whole pound of candied peel, according to the taste, the grated rinds of two large lemons, and two more boiled quite tender, and chopped up entirely, with the exception of the pips, two small nutmegs, half an ounce of salt, a large teaspoonful of pounded mace, rather more of ginger in powder, half a pint of brandy, and as much good sherry or madeira. Mince these ingredients separately, and mix the others all *well* before the brandy and the wine are added; press the whole into a jar, or jars, and keep it closely covered. It should be stored for a few days be-

fore it is used, and will remain good for many weeks. Some persons like a slight flavoring of cloves, in addition to the other spices; others add the juice of two or three lemons, and a larger quantity of brandy. The inside of a tender and well-roasted sirloin of beef will answer quite as well as the tongue.

Of a fresh-boiled ox-tongue, or inside of roasted sirloin, 1 lb.; stoned raisins and minced apples, each 2 lbs.; currants and fine sugar, each $2\frac{1}{2}$ lbs.; candied orange, lemon, or citron-rind, 8 to 16 ozs.; boiled lemons, 2 large; rinds of two others, grated; salt, $\frac{1}{2}$ oz.; nutmegs, 2 small; pounded mace, 1 large teaspoonful, and rather more of ginger; good sherry or madeira, $\frac{1}{2}$ pint; brandy, $\frac{1}{2}$ pint.

Obs.—The lemons will be sufficiently boiled in from one hour to one and a quarter.

MINCE PIES.

A very good mince pie may be made from the hock of beef, or the neck-piece, or both boiled together till tender. After being thoroughly boiled, separate the meat from the bones and gristle, and chop it fine. Add to every pound of beef half a pound of suet chopped fine, and a pound of tart apples chopped fine. Wet the above pretty moist with sweet cider, (or vinegar and water, if you cannot get cider,) and make the whole as sweet as you may wish, with sugar and molasses, or either. Now add a little salt, pepper, ginger, cinnamon, cloves, allspice, and mace, (or as many of these as you please,) according to your taste, and a few stoned raisins and currants. Make your pies on shallow plates, with a thick upper crust, in which a small hole should be cut, and bake.

If you wish to prepare meat for pies, to keep some time, boil and chop your meat as before mentioned,

adding the suet, cider, sweetening, and spices, *leaving out the apples* ; pack this in a jar, and pour over it a tea-cup full of brandy. Cover the jar with white paper, tie it up tight, and put it away in a cool place. When wanted for use, add the apples.

PUMPKIN PIES.

Take a fine ripe pumpkin, rinse it, take out the inside, and cut the solid part into small pieces. Put these into a covered pot, with just water enough to prevent their burning. When stewed soft, stir thoroughly with a wooden stick. Let it remain on the fire until the water is all evaporated ; stirring it occasionally, to prevent its burning or adhering to the pot. When the stewed pumpkin is sufficiently dry, take it out of the pot, and when it is cool enough, pass it through a sieve.

Now take milk, according to the number of pies you may wish to make out of the stewed pumpkin. No rule can be given as to the quantity of milk, as it must depend on the taste of the cook, and the richness of the pies wanted. If you wish them *plain*, add to the pumpkin milk enough to make it of the consistency of thick batter, and sweeten with molasses and sugar, or with either alone. The sweetening must necessarily be a matter of judgment, to be governed by tasting the mixture. Now add a tablespoonful of ginger, and one of powdered cinnamon. Two or three eggs would make them richer.

Now roll out your paste, and line a soup-plate with it, turning the edges neatly. Then cut a thin strip of paste, and lay it around the edge of the plate, and fill up with the prepared pumpkin.

These pies require a hot oven, and should be baked as soon as filled.

GENERAL REMARKS ON CAKES.

The ingredients for cakes, as well as for puddings, should all be fresh and good, as well as free from damp; the lightness of many kinds depends entirely on that given to the eggs by whisking, and by the manner in which the whole is mixed. A *small* portion of carbonate of soda, which will not be in the slightest degree perceptible to the taste after the cake is baked, if thrown in just before the mixture is put into the oven, will ensure its rising well.

To guard against the bitterness so often imparted by yeast, when it is used for cakes or biscuits, it should be *sparingly* added, and the sponge should be left twice the usual time to rise. This method will be found to answer equally with bread. For example: should a couple of spoonfuls of yeast be ordered in a receipt, when it is bitter, use but one, and let it stand two hours, instead of half the time; the fermentation, though slow, will be quite as perfect as if it were more quickly effected, and the cake or loaf thus made, will not become dry by any means so soon as if a larger portion of yeast were mixed with it.

All light cakes require a rather brisk oven to raise and set them; very large rich ones a well-sustained degree of heat, sufficient to bake them through; and small sugar-cakes a very slow oven, to prevent their taking a deep color before they are half done: gingerbread, too, should be gently baked, unless it be of the light thick kind.

To ascertain whether a cake be done, thrust a knife into the centre, and should this come out clean, draw it from the oven directly; but should the paste adhere to it, continue the baking. Several sheets of paper are placed usually under large plum-cakes.

BUCKWHEAT CAKES.

Take a quart of lukewarm water ; add a tea-spoonful of salt ; make a moderately thick batter of buckwheat flour, and two handfuls of Indian corn meal. - Then add a tea-cupful of home-made yeast, or a table-spoonful of brewer's yeast, and set it over night in a warm place to rise. In the morning add a tea-spoonful of saleratus, *if the above mixture be sour*, dissolved in a little hot water. Fry them in fat enough to prevent their sticking to the griddle.

ICING FOR PASTRY.

The best mode of icing pastry before it is sent to the oven is, to moisten the paste with cold water, to sift sugar thickly upon it, and to press it lightly on with the hand ; but when a *whiter* icing is preferred, the pastry must be drawn from the oven when nearly baked, and brushed with white of egg, whisked to a froth ; then well covered with the sifted sugar, and sprinkled with a few drops of water before it is put in again : this glazing answers also very well, though it takes a slight color, if used before the pastry is baked.

IMPROVED CORN BREAD.

Take corn-meal, a sufficient quantity to make a stiff batter, with three pints of sour milk ; three eggs, well beaten ; two ounces shortening ; one gill best molasses ; a little salt and saleratus ; grease pan well, and bake quick.

VERY GOOD SMALL RICH CAKES.

Beat and mix well together four eggs properly whisked, and half a pound of fine sifted sugar ; pour to them by

degrees a quarter-pound of clarified butter, as little warmed as possible; stir lightly in with these four ounces of dry sifted flour, beat the mixture for about ten minutes, put it into small buttered patty-pans, and bake the cakes a quarter of an hour in a moderate oven. They should be flavored with the rasped or grated rind of a small lemon, or with pounded mace or cinnamon.

Eggs, 4; sugar, $\frac{1}{2}$ lb.; butter, 4 ozs.; flour, 4 ozs.; lemon-rind, mace, or cinnamon: baked 15 minutes.

GINGERBREAD.

For a simple kind of gingerbread, the following ingredients only are needed: one quart of molasses; a tea-cupful of butter, and one of cream; two tea-spoonfuls of pearlsh, (or saleratus;) a table-spoonful or two of ginger; and flour.

Take as much flour as you think the molasses and cream will wet; rub the butter thoroughly into the flour; crush the saleratus very fine, and put it into the cream. Now add the cream and molasses, and ginger, to the flour, and knead it into a dough of a proper consistency to roll out into sheets or cakes, as may be desired.

Soft Gingerbread is made by mixing three tea-cupfuls of molasses, one of melted butter, one table-spoonful of ginger, four well-beaten eggs. After mixing the above together, add a few handfuls of flour, and then a tea-cupful of cream, with a tea-spoonful of saleratus dissolved in it. Then stir in sufficient flour to make it of a thickness to just enable you to stir it with a spoon.

If *milk* is used in either of the above cakes, instead of cream, add more butter. Beef drippings are very nice for a part of the shortening.

CUP CAKE

To three cups of light bread dough, add two cups crushed brown sugar, one cup of butter, half a cup of cream or milk, a tea-spoonful of saleratus, a tea-spoonful of cinnamon, and a grated nutmeg. Beat these well together for fifteen or twenty minutes. Three or four eggs improve this cake, but it is very good without them.

After the above are well mixed, put the same into your cake-pans, and let it remain half an hour before setting in the oven.

BUTTER BISCUITS.

Take four pounds of flour, and cut into it one pound of butter, and a little salt. Then wet with sufficient water or milk to form a stiff dough; and knead it very hard. After it is well and thoroughly kneaded, beat the dough hard on both sides with a rolling-pin for some time. Then roll the dough, and cut it into small round cakes. These cakes should be pounded again on both sides, pricked, and baked in a moderate oven.

CRULLERS.

Mix one cup of butter and one of sugar; beat and add four eggs, and spice to your taste. Add a little flour, then a tea-cupful of cream, with a tea-spoonful of saleratus, and flour enough to roll out. Spread some flour on your paste-board, and roll the dough out to the thickness of about half an inch. Cut the dough into slips, and twist in any form you please; or shape the crullers with a jagg-iron. Have ready an iron pot or a deep pan, with melted lard in it, and lay the crullers lightly in. The lard should be hot enough to boil up when the cakes are

laid in, and the crullers should be constantly watched, and turned when brown.

These cakes are plain, but good. A richer kind may be made by using one and a half pounds of sugar, three quarters of a pound of butter, thirteen eggs, a grated nutmeg, and as much flour as the eggs will take.

RICH DOUGH-NUTS.

Three pounds of sifted flour; a pound of powdered sugar; three quarters of a pound of butter; four eggs; half a large tea-cupful of yeast; a pint and a half of milk; a tea-spoonful of powdered cinnamon; a grated nutmeg; a table-spoonful of rose-water, if desired.

Cut up the butter in flour. Add the sugar, spice, and rose-water. Beat the eggs very light, and pour them into the mixture. Add the yeast, (half a tea-cup, or two wine-glasses full,) and then stir in the milk by degrees, so as to make it a soft dough. Cover it, and set it to rise.

When quite light, cut it in diamonds with a jagg-iron, or a sharp knife, and fry them in lard. Grate loaf-sugar over them when done.*

MUFFINS.

Take a quart of new milk, put into it a large spoonful of butter, and set them by the fire till the butter is melted; then add a tea-spoonful of salt. Beat three eggs, and stir them into the above, with a large spoonful of brewer's yeast, or four of home-made yeast. Then stir in sufficient flour to make it of the consistency of the soft gingerbread described on another page.

Set the batter to rise in a warm place, and it will be

* On page 127, a recipe for good common dough-nuts may be found.

ready to bake in four or five hours. When light, grease your baking-iron and muffin-rings. Fill your rings half full of the batter, and bake until the muffins are light brown. Pull them open with your fingers, and butter them while hot.

ROLLS.

To seven pounds of flour add two tea-spoonfuls of salt. Make a hole in the mass of flour, and stir in two table-spoonfuls of good brewer's yeast, or a tea-cupful of home-made, mixed with a little lukewarm water. Then add a quart of milk, and stir the whole with a spoon *in the centre of the flour*, till a thin batter is formed in the centre. Sprinkle a little flour over the batter, and set it to rise. When light, knead it well, and form into rolls, and allow them fifteen or twenty minutes to rise before baking.

SPONGE CAKE.

Break the whites of ten eggs into a large shallow dish; beat them *as light as possible*. Beat the yolks with one pound of finely powdered white sugar, the grated rind of two lemons, and the juice of one. When the whites have been thoroughly beaten, add them to the yolks and sugar; and then add gradually half a pound of sifted flour; beat them all well together, and bake in a quick oven.

Now butter some sheets or strips of white paper, and line your baking-tins before putting in your cake; and if, while baking, it browns too soon, lay paper over the top of the cake.

If you bake the whole in one cake, it will require an hour's baking; but if in smaller ones, ten or fifteen minutes are sufficient.

BATTER CAKE.

Take one pint of cream, one pint of sour milk or buttermilk, four eggs, a tea-spoonful of salt, saleratus sufficient to destroy the acidity of the milk, and three pints of sifted flour, or sufficient to make a stiff batter. Stir the articles well together, and bake in a deep dish. To be eaten hot with butter.

VERY SUPERIOR WHIPPED SYLLABUBS.

Weigh seven ounces of fine sugar, and rasp on it the rinds of two fresh sound lemons of good size, then pound or roll it to powder, and put it into a bowl with the strained juice of the lemons, two large glasses of sherry, and two of brandy; when the sugar is nearly or quite dissolved, add a pint of rich cream, and whisk or mill the mixture well; take off the froth as it rises, and put it into glasses. These syllabubs will remain good for several days, and should always be made, if possible, four and twenty hours before they are wanted for table. The full flavor of the lemon-rind is obtained with less trouble than in rasping, by paring it very thin indeed, and infusing it for some hours in the juice of the fruit.

Sugar, 7 ozs.; rind and juice of lemons, 2; sherry, 2 large wine-glasses full; brandy, 2 wine-glasses full; cream, 1 pint.

Obs.—These proportions are sufficient for two dozen or more of syllabubs: they are often made with almost equal quantities of wine and cream, but are certainly neither so good nor so wholesome without a portion of brandy.

GOOD COMMON BLANC MANGE.

Infuse for an hour, in a pint and three quarters of new milk, the very thin rind of one small, or of half a large

lemon, and eight bitter almonds, blanched and bruised; then add two ounces of sugar, or rather more for persons who like the blanc mange very sweet, and an ounce and a half of isinglass. Boil them gently over a clear fire, stirring them often until this last is dissolved; take off the scum, stir in half a pint of rich cream, and strain the blanc mange into a bowl: it should be moved gently with a spoon till nearly cold, to prevent the cream settling on the surface. Before it is moulded, mix with it by degrees a wine-glass full of brandy.

New milk, $1\frac{3}{4}$ pint; rind of lemon, $\frac{1}{2}$ large, or whole small one; bitter almonds, 8: infuse 1 hour. Sugar, 2 to 3 ozs.; isinglass, $1\frac{1}{2}$ oz.: 10 minutes. Cream, $\frac{1}{2}$ pint; brandy, 1 wine-glass full.

RICHER BLANC MANGE.

A pint of good cream, with a pint of new milk, sweetened and flavored as above, or with a little additional sugar, and the rind of one very fresh lemon, with the same proportion of isinglass, will make very good blanc mange. An ounce of Jordan almonds may be pounded and mixed with it, but they are not needed with the cream.

CUSTARD.

Boil in a quart of milk a few peach-leaves or a stick of cinnamon. Beat with four, or if you prefer, six eggs, two or three large spoonfuls of brown sugar. Add the milk, and bake fifteen or twenty minutes.

FINE ALMOND CAKE.

Blanch, dry, and pound to the finest possible paste eight ounces of fresh Jordan almonds, and one ounce of bitter;

moisten them with a few drops of cold water or white of egg, to prevent their oiling; then mix with them *very* gradually twelve fresh eggs which have been whisked until they are *exceedingly* light; throw in by degrees one pound of fine, dry, sifted sugar, and *keep* the mixture light by constant beating, with a large wooden spoon, as the separate ingredients are added. Mix in by degrees three-quarters of a pound of dried and sifted flour of the best quality; then pour gently from the sediment a pound of butter which has been just melted, but not allowed to become hot, and beat it very gradually but very thoroughly into the cake, letting one portion entirely disappear before another is thrown in; add the rasped or finely-grated rinds of two sound fresh lemons, fill a thickly buttered mould rather more than half full with the mixture, and bake the cake from an hour and a half to two hours in a well-heated oven. Lay paper over the top when it is sufficiently colored, and guard carefully against its being burned.

Almonds, $\frac{1}{2}$ lb.; bitter almonds, 1 oz.; eggs, 12; sugar, 1 lb.; flour, $\frac{3}{4}$ lb.; butter, 1 lb.; rinds, lemons, 2: $1\frac{1}{2}$ to 2 hours.

Obs.—Three-quarters of a pound of almonds may be mixed with this cake when so large a portion of them is liked, but an additional ounce or two of sugar, and one egg or more, will then be required.

POUND CAKE.

Mix, as directed in the foregoing receipt, ten eggs, (some cooks take a pound in weight of these,) one pound of sugar, one of flour, and the same of butter. A glass of brandy and a pound of currants may be added very gradually just before the cake is put into the oven, with any spice that is liked, and two or three ounces of candied orange or lemon rind, sliced thin, or an ounce of caraway seeds

may supply the place of all. A cake made with half the quantity of the ingredients must be baked one hour

A RICH WEDDING CAKE.

One pound of flour, one pound of butter, one pound of sugar, ten eggs, one gill of brandy, two pounds currants, two and a half pounds of raisins, half a pound citron, half ounce mace, half ounce cinnamon, two nutmegs, one spoonful ginger, and half a wine-glass of rose-water.

The currants should be washed and cleaned the day previous; dry them by rubbing in a coarse napkin, and then spread them upon a large dish to dry. Stone the raisins and cut them in halves; sprinkle the currants and raisins well with flour; mix the brandy and rose-water in a cup, adding thereto the spice pounded fine; sift your flour; if you use brown sugar, dry and roll it; if white sugar, crush it and pass it through a coarse sieve. Now stir the butter and sugar together to a light, creamy state; beat your eggs very light, and stir them into the butter and sugar; to this mixture add gradually a part of the flour, and then stir in the spices and the liquor as above; now add the remainder of the flour, and the currants and raisins alternately; stir the whole a few minutes; now butter a large tin pan, and cover the bottom and sides of it with sheets of white paper well buttered; then put into the pan some of the cake as above mixed, and spread upon it a few shreds or strips of the citron; then another portion of the cake, and upon it some citron; and so on till the whole is in the pan.

It will require four or five hours' baking.

APPLE SAUCE

(*Good.*)

Put a table-spoonful of water into a quart basin, and fill

it with good boiling apples, pared, quartered, and *carefully* cored; put a plate over, and set them into a moderate oven for about an hour, or until they are reduced quite to a pulp; beat them smooth with a clean wooden spoon, adding to them a little sugar, and a morsel of fresh butter, when these are liked, though they will scarcely be required.

The sauce made thus is far superior to that which is boiled. When no other oven is at hand, a Dutch or an American one would probably answer for it; but we cannot assert this on our own experience.

Good boiling apples, 1 quart: baked one hour (more or less, according to the quality of the fruit, and temperature of the oven); sugar, 1 oz.; butter, $\frac{1}{2}$ oz.

COMMON PUDDING SAUCE.

Sweeten a quarter-pint of good melted butter with an ounce and a half of sugar, and add to it gradually a couple of glasses of wine; stir it until it is on the point of boiling. Lemon-grate, or nutmeg, can be added at pleasure.

PORK AND BEANS.

Take one quart of dried beans, and after picking them over, put into a vessel and cover them over with soft water. This should be done the night before they are wanted for use. Set them in the corner of the fire-place, or where they will be warm, and let them remain over night. In the morning change the water, and let them heat gradually, but not boil, until they are perfectly swollen. Then take one pound of pork, (that which has some lean is generally preferred,) gash the rind, and after skimming out the beans from the water, put with the beans and boil until soft, in water sufficient to cover them. Then take out

the beans and put into a pan, laying the pork in the centre with the rind above the surface. Bake from one to three hours.

OBSERVATIONS ON PICKLES.

The first requisite in making pickles is to have unadulterated vinegar, for all the expense and trouble bestowed upon them is often entirely lost in consequence of ingredients being mixed with this, which soften and sometimes even partially decompose the substances immersed in it. That which is home-made is generally found for all purposes to answer best, and it may be prepared of almost any degree of strength by increasing the ordinary proportion of fruit and sugar, or whatever else may be used for it. The refuse of cider, wine, &c., &c., may be converted into excellent vinegar: but unless the pickles be quite covered with their liquor, and well protected from the air and from the influence of damp, which is more than any thing destructive of them, the purity of the vinegar will not preserve them eatable. We can confidently recommend to the reader the rather limited number of receipts which follow, and which might easily be multiplied did the size of our volume permit. Pickling is so easy a process, however, that when in any degree properly acquired, it may be extended to almost every kind of fruit and vegetable successfully. A few of the choicer kinds will nevertheless be found generally more acceptable than a greater variety of inferior preparations. Mushrooms, gherkins, walnuts, lemons, and peaches, for all of which we have given minute directions, will furnish as much choice as is commonly required.

PICKLED ONIONS.

Take the smallest onions that can be procured, just after

they are harvested, for they are never in so good a state for the purpose as then; proceed, after having peeled them, exactly as for the eschalots, and when they begin to look clear, which will be in three or four minutes, put them into jars, and pour the pickle on them. The vinegar should be very pale, and their color will then be exceedingly well preserved. Any favorite spices can be added to it.

TO PICKLE PEPPERS.

Take small green peppers, and if you wish them mild, take out the seeds. Soak the peppers in salt and water a few days, changing the water every other day. Drain them, and put into jars, or bottles, and pour over them sharp, good vinegar. Add mustard-seed, and a few small green tomatoes, if you like.

TO PICKLE CABBAGE.

Pull off the loose leaves, and cut the cabbage into shreds with a sharp knife; then sprinkle a little salt in the bottom of a keg or jar; then put in a layer of cabbage, and sprinkle salt, peppercorns, a little mace, cinnamon, and allspice; then add another layer, and add spices and salt, as before. Continue these alternate layers, etc., until your jar is full. Heat your vinegar scalding hot, put in a little alum, and turn it while hot on the cabbage. Turn the vinegar from the cabbage six or seven times, heat it scalding hot, and turn it back while hot, to make them tender.

TO PICKLE CUCUMBERS.

Gather those that are small and green, and let them remain in the shade until the next day; then rinse and dry gently with a cloth, so as to remove the black specks. Have ready some cold vinegar, with alum and salt in

proportion of a large spoonful of alum, and a tea-cup of salt to a gallon of vinegar. Throw in your cucumbers, which will require to be picked every other day. When you have done collecting them, turn the vinegar from the cucumbers, scald and skim it till clear; then put in the pickles, let them scald, without boiling, for half an hour, then turn them while hot into the vessel you wish to keep them in. If you wish them spiced, you can pulverize pepper, cloves, allspice and mace, tie them in a cloth, and throw into the vinegar after it is skimmed, and let them scald with the cucumbers. Should your vinegar become weak, throw it away, and put fresh to the cucumbers with the spices. Whenever any scum rises the vinegar needs scalding. String-beans and radish pods, make a very nice pickle. Keep them in salt and water, while collecting them, changing the water as often as once in four or five days. Scald them in hot salt and water; let them lie until cool, and then pour on hot vinegar and spice.

TO MAKE SOFT SOAP.

Save all your ashes in a dry place. Take a good strong barrel, bore a large hole in the bottom, and place it on some blocks of wood, to raise it from the ground sufficiently high to set a pail or a kettle under it. Then place on the bottom of the barrel inside, three or four bricks or pieces of wood, and a wisp or two of clean straw on the top of them. Then fill the barrel with ashes. Then add sufficient cold water to wet the ashes thoroughly. Let it soak thus for three days. After this, add a gallon of water every hour or two, for two days, and let it drop from the hole in the barrel, into a tub beneath. Keep it dripping until the lye loses its color. Sometimes, it is necessary to add fresh ashes to the barrel. You

can tell whether it is necessary to do so, by the color of the drippings. If the lye is a good amber-color it is all right; if it is pale, it needs more ashes. Good lye should be strong enough to bear up a potatoe or an egg.

You must try this as you proceed.

To make a barrel of soap, you must have the lye from five or six bushels of ashes, and four quarts of unslacked lime; eight quarts if it be slacked.

The next step is to put the lime into two pails of boiling water, throw it into the barrel of ashes and let it drain through.

Then take three pounds of grease to each pailful of lye—put all these into a large kettle to boil. Let them boil together until they become thick and ropy, which makes the soap. A small bit of lime thrown in while the boiling is going on, is of use.

The above soap can be made without the trouble of boiling, although it takes a longer time. The mode is this:

Prepare the lye as in the above plan. *Fry out* the grease, and strain it from the scraps. Take two pounds of this tried grease to each pailful of lye, and mix it with the lye, the latter being heated.

Then let it stand in the sun, and stir it thoroughly every day, and soap will come in a few days. If it do not look like soap in five or six days, add a little hot lye to it; if it does not "come," then add a little grease.

TO MAKE CHEAP CANDLES.

Save all the beef and mutton tallow you can. Try it out from time to time as you can get it, and make it into little cakes for preservation. When you wish to make your candles, melt your tallow and put it into some vessel with a wide mouth; a large-sized iron pot is a

good one. The wicks should have been previously prepared, in a way familiar to almost every housekeeper. Should any emigrant not understand it, any neighbor will show him how it is done. Candle-wicking can be procured at any of the country stores. It is necessary to keep the liquid hot while the dipping is going on. As the tallow decreases in the pot by dipping, hot water should be added to keep the tallow at the surface. The candles should not be cooled too quickly, lest they should crack.

A better description of candles may be thus made. Melt together ten ounces of mutton tallow, a quarter of an ounce of camphor, four ounces of beeswax, and two ounces of alum; and then run it into moulds as usual, or dip the candles. These candles furnish a beautiful light.

TO MAKE HARD WATER SOFT.

While the water is heating, take two quarts of wheat bran, put this in a bag and place it in the water, and the water, when hot enough for use, will be soft. This is enough for a common washing.

Another method is to use *soda*. A few ounces of this will soften a hogshead of water. It will give a delicate whiteness to the linen, without the slightest injury, and will not affect the hands. It costs but little, and is a great relief to those who cannot procure rain or other soft water.

TO MAKE VINEGAR.

Take a clean oaken-barrel, or wine-cask, place it in a warm room; if in the summer time, in a hot place where the sun will strike on it; put in one, two, or more gallons of clear fermented cider; leave the bung out, so that the

air may have free circulation. In two or three weeks it will be fit for use.

Cider may then be added, from time to time, in small quantities, taking care that no larger quantity of it be added at any one time than there is vinegar in the cask.

LABOR SAVING SOAP.

To make it, take two pounds of sal. soda, two pounds of yellow bar soap, ten quarts of water, or in like proportion. Cut the soap into thin slices, and boil altogether two hours, and then strain through a cloth into a tight box or tub; let it cool, and it is fit for use. Do not let it freeze.

To use it: put the clothes in soak the night before you wash. The next morning put your water into your kettle or boiler. To every two pails of water, add about one pound of the soap. As soon as the water with its dissolved soap begins to boil, wring out the clothes from the water in which they had been at soak during the night, and put them into the boiling water, without any rubbing. Let them boil one hour, then suds and rinse them, and they will be clean and white. They will need no rubbing, except a little on such places as are soiled, and for that no wash-board will be required. The clothes should be rinsed in two waters.

Colored and woollen clothes must not be boiled as above, but may be washed in the suds weakened with water. The clothes will last longer by the use of this soap, and much labor will be saved.

Six pounds of sal. soda, six pounds of bar soap, and thirty quarts of water, will make about fifty pounds of the soap. The soda costs about eight cents a pound, and the bar soap eight cents a pound.

A pint measure will hold a pound of the labor-saving soap. This will save the trouble of weighing every time.

TO PREPARE SOUSE.

Pigs-feet, ears, etc., make a cheap and excellent dish. In preparing them, clean them thoroughly in water not very hot; then peel the hoofs off with a sharp-pointed knife; cut off the hard, rough places; then singe them and boil them until they are thoroughly tender, or till they are with difficulty taken out with a fork, say five hours. Take them out, and put them in cold water. *Mind and save the liquor in which they were boiled.*

Take the bones out and pack the meat down tight in a wooden or stone vessel. After it is packed close, boil the jelly-like liquor in which they were cooked, with an equal quantity of vinegar, for four hours. Put in as much salt as you think necessary, and add cloves, allspice and cinnamon, at the rate of about a quarter of a pound to one hundred weight of the meat. The vinegar, with these ingredients added, is to be poured upon the souse scalding hot. When used, fry it.

SALTED CODFISH.

Salted codfish is very much used in the United States, and is cheap, and usually kept for sale at all the country stores. Emigrants are sometimes, indeed, generally unacquainted with the proper mode of cooking it, although it is very simple.

The fish should be soaked in lukewarm water until the skin will easily come off, then take up the fish, scrape off the skin, and put it in fresh cold water. Then set it on a very moderate fire, where it will be very hot, but without boiling. It will take three or four hours to cook it soft. Dish it and use with drawn-butter, with boiled potatoes. It makes a *most excellent* dish.

It makes a very nice dish for breakfast, to take the remains of the dinner, and hash them up with potatoes,

moistened with water and a good deal of butter, all warmed together.

TO PRESERVE CABBAGES.

Gather them before the severe fall frosts. Let the coarse outside leaves remain on them. Fix a strong string around the stalk ; and suspend the cabbage from the timbers of the ceiling, heads downward. The cellar should be cool and dry. This will preserve them with certainty.

Another good method is to cut the head from the stump, pack close in a cask, taking care to fill up all the vacancies with dry chaff, or bran, and keep in a dry cellar.

TO KEEP HAMS DURING THE SUMMER.

Take an old flour-barrel, or other dry cask, put a good layer of coarse salt in the bottom, and then put down a ham ; cover that with coarse salt, and put down another ham, and so on till the cask is full, or all put in.

Put the cask in a cool, *dry* place ; and the hams will all come out perfectly good, *provided they went in good.*

TO MAKE HOMMONY.

In the first place, you must have a mortar. The following is a description of one which you can make in a few minutes. Cut a block twenty inches long, and about ten inches in diameter, from a sound white-oak ; dress one end smooth ; mark out a square, six by six inches ; seven inches from the head saw in around the block about three inches deep, then shape the head to the square as prescribed ; cut into the block so as to form a flare in the shape of a wine-glass ; take off from a board four pieces eighteen inches long ; fit them snugly to this head, the top to flare in the clear eleven or twelve inches, and secure them with nails. For the pestle take an iron

wedge, and a round stick about the size of the wedge ; split one end ; enter the wedge about two inches ; let an iron ring over the other end, that will fall down over the thin end of the wedge, and you have a mortar and pestle at your hand.

The next is some white corn, large round grain, (*not gourd seed*) cut the tip ends off, shell none but what is ripe and sound, that which is tight on the cob ; take one gallon more or less, and pour boiling water to it ; let it stand about fifteen minutes, then commence beating ; take it out occasionally, and blow out the hulls. When you find the grains all broken, put it into water and wash it, and float off all of the light stuff that may arise ; then put it into the pot for boiling. Three or four hours are sufficient. Have a kettle of hot water at hand to fill up occasionally ; stir it often, otherwise it will burn, which injures it very much. If you wish to put in beans, one pint to a gallon of hommony is sufficient. When done, stir in as much fine salt as would be required to season mush, then put it into stone or tin vessels. Set it in a cool place *not to freeze*. When wanted for use, take the quantity necessary for breakfast or dinner, having put a small quantity of lard into the pan. Let it become hot ; then put in the hommony and mash it up well, and when hot it is fit for the table.

TOMATO FIGS.

The medicinal qualities of tomatoes have greatly increased their cultivation, and every new preparation of the article is deserving consideration. A sample of "tomato figs" has been deposited at the patent-office, of a very superior quality. From the taste, one should suppose all the good qualities of the fruit are retained. In appearance, the drum of tomatoes resembles one of figs so nearly, that they might easily be mistaken for the same.

The sample was deposited by Mrs. Steiger, of Washington city, and the recipe was transmitted with it for publication. It is deeply to be regretted that, since the periodicals of the day are open to communications, so many valuable improvements are lost to the world, barely for the want of publicity. Others may have dried the tomatoes with a recipe, however less successful.

RECIPE.—Take six pounds of sugar to one peck (or sixteen pounds) of the fruit. Scald and remove the skin of the fruit in the usual way. Cook them over a fire, their own juice being sufficient without the addition of water, until the sugar penetrates and they are clarified. They are then taken out, spread on dishes, flattened and dried in the sun. A small quantity of the syrup should be occasionally sprinkled over them while drying; after which, pack them down in boxes, treating each layer with powdered sugar. The syrup is afterward concentrated and bottled for use. They keep well from year to year, and retain surprisingly their flavor, which is nearly that of the best quality of fresh figs. The pear-shaped or single tomatoes answer the purpose best. Ordinary brown sugar may be used, a large portion of which is retained in the syrup.

TOMATO CATSUP.

The tomatoes, when fully ripe, should be bruised and boiled slowly for half an hour; then strained through a cloth, and the liquid boiled another half hour, after adding salt and spices, but without any admixture of water. The scum should be carefully removed, so as to render the liquor as pure as possible. It should be bottled and kept in a cool place. After it has stood a short time, should any sediment be discovered in the bottles, (and in order to know with certainty, clear bottles would be the

best for this use,) the liquor should be poured off into other bottles. In this way, catsup of excellent quality—preferable to that from mushrooms, and clear as choice Madeira—can be readily made, in greater quantity and with less trouble than in the common way.

THE RAW TOMATO.

In this state, the ripe fruit should be picked from the vine and sliced up in vinegar like cucumbers, with a little oil, pepper, and salt; or it may be eaten like ripe fruit, without seasoning.

TOMATO SAUCE.

Parboil the ripe tomato until the skin will slip; peel and mash them; and add to every pound of tomatoes one ounce of butter; season with pepper and salt, and simmer over a slow fire until perfectly cooked. If, however, toast should be added to the sauce, the proportion of butter should be increased.

FRIED TOMATO.

Ripe tomatoes, sliced up and fried in butter, are, to many, quite delicious.

TOMATO PICKLES.

Pickles are made of the green fruit, by the same process that you would observe in the pickling of cucumbers, or any other articles. The ripe fruit may likewise be pickled, and, in fact, is a preferable article, as it is in that case highly medicinal, and has a much better flavor.

TO PREPARE GREEN CORN FOR USE IN WINTER.

Take a large copper boiler of boiling water, and fill it with ears of husked corn such as are used for roasting

ears; and after boiling about ten minutes, scrape off the corn with an iron spoon, and spread it in the sun to dry, either on plates, boards, or cloths. When thoroughly dried, it is hung up in bags, and makes in the winter a most delightful dish—almost as good as fresh green corn.

The best kind is the sweet corn, of which the best variety is that which shrinks most in drying.

HOW TO COOK STRING BEANS.

There is a way to cook this vegetable, by which it is very much improved both in appearance and flavor. The pods are split (not opened at the edges, but in an opposite direction,) from end to end, and then cut into short pieces as in the usual way; they are then boiled in any suitable vessel, separate from meat or other vegetables, a small quantity of pearlsh or saleratus having been thrown into the water. When taken from the water, after having been sufficiently cooked, they are of a beautiful bright-green color, and will be found much more tender and delicate than when cooked without the saleratus. They are, of course, to be seasoned according to your own taste.

HOW TO COOK GREEN PEAS.

The common method of cooking this delicious vegetable, by boiling in water, is nearly destructive to its flavor—at least so says a lady, who gives the following method of preparing them for the table: "Place in the bottom of your sauce-pan or boiler, several of the outside leaves of head salad; put your peas in the dish with two ounces of butter in proportion to half a peck of peas; cover the pan or boiler close, and place it over the fire; in thirty minutes they are ready for the table. They can either be seasoned in the pan or taken out. Water extracts nearly all the delicious quality of the green pea, and is as fatal to their flavor as it is destructive to a mad dog."

WASHINGTON CAKE.

So called, because it was a favorite at the table of Gen. Washington.

Take two pounds of flour, one quart of milk, with an ounce of butter, heated together; put the milk and butter into the flour when about lukewarm, add a cent's worth of yeast, three eggs, and a tea-spoonful of salt; place it in pans over night, and bake it in the morning in a quick oven for three-quarters of an hour.

TO CURE HAMS IN A CHEAP MANNER.

Lay your hams in tubs, if convenient, flesh side up; sprinkle salt on the fleshy part; let them drain twenty-four hours; then rub off the salt, and lay them in a large tub. Then prepare a brine by dissolving one pound of salt in one gallon of water, and to every six pounds of salt three and a half ounces of saltpetre. Make a sufficient quantity to cover the hams. Boil the brine, taking off the scum, and while boiling-hot pour it over the hams. Let them lie in the brine six weeks, then take them out, drain them, and smoke them.

Smoking hams is done as follows: Make a smoke with corn-cobs, if you have them—if not, with sound hard wood, with damp saw-dust thrown over the fire to prevent a blaze. Suspend your hams above this at a distance, to receive the most of the smoke. When they are a good brown color, which will be in about three weeks, they are smoked sufficiently.*

They should then be dried. When dry, sew any kind of cotton cloth over them, and whitewash the outside; or if you have plenty of ashes in a dry place, cover the hams with paper, and bury them in ashes till wanted for use. This preserves them from bugs, and it is thought to improve their flavor.

* To make *Westphalia Hams*, see Index

THE VIRGINIA MODE OF CURING HAMS.

Dissolve two ounces of saltpetre, and two tea-spoonful^s of saleratus, in salt pickle (salt and water,) as strong as possible; for every sixteen pounds of ham, add half a pint of molasses. Then put the hams into the pickle, and let them remain three or four weeks; then take them out and smoke them with the hocks downward, to preserve the juices.

TO MAKE POTATO STARCH.

Take raw potatoes, pare them, and grate them; place the pulp in a strainer; pour cold water a number of times on the pulp while in the strainer, and catch the water in a vessel underneath. A white substance will be found in the bottom of this vessel. Now turn the water off, and when the sediment is perfectly dried, it is starch.

TO IMPROVE THE FLAVOR OF MOLASSES.

The use of molasses, or treacle, in the United States, is very great, and it can be had at almost every country store. Some people dislike the peculiar flavor of molasses, and the following is a mode by which it may be much improved. It will then answer for sweetening tea and coffee, or for preserves, cake, and the like.

Take such quantity of molasses as may be desired; add to it an equal *weight* of soft, pure water; boil these, with about one-eighth part of powdered charcoal, for half an hour. Strain the whole, and let it evaporate slowly, till it is of the usual thickness of molasses.

This is well worth trying by those who desire a good and cheap article of sweetening.

PRESERVING BREAD MOIST.

The other day, says an editor, I saw a lady, on taking her bread out of the oven, wash her loaves with cold

water. I inquired the reasons. She said there were two objects in it—one to wash off the ashes and coals that might adhere, and the other to keep the bread from becoming too dry and hard. After washing the loaves moderately, she put them in a barrel, and covered them closely with a clean cloth.

POTATO YEAST.

To two middling-sized boiled potatoes, add a pint of boiling water, and two table-spoonsful of brown sugar. One pint of hot water should be applied to every half pint of the compound. Hot water is better in warm weather. This yeast being made without flour will keep longer, and is said to be much better than any previously in use.

TO PRESERVE HAMS FROM FLIES.

For a score of hams, take about three quarts of salt, one pint of molasses, one-fourth of a pound of black pepper, and two ounces of saltpetre pulverized; mix well together; lay the hams on the table with the rind downward; rub the mixture over them with the hand, taking care to apply it to every part where there is no rind; let them lay a week, and rub them over with clear salt, which continue once a week for four or six weeks, according to the size of the hams, and they are ready to smoke; or if you choose after the mixture is sufficiently struck in, put them into brine for two or three weeks, and smoke. When smoked; hang them in a dry place. When a ham is cut for use, hang it or lay it where you please, the flies will not touch it.

Some persons preserve hams, etc., from flies, bugs, etc., by simply dusting every part except the rind, with finely pulverized black pepper.

SPRUCE BEER.

Take twenty-two quarts of water, and two quarts of molasses; a table-spoonful of ginger, one-fourth ounce essence of spruce, and one pint of yeast—stir all well together, let it stand over night, and bottle for use. It should be kept in a cool place in warm weather. This will be found a good and healthy drink at all seasons of the year, but more so for the summer season. Another more valuable may be made, called

“*Minute Beer*,” which is to be made in such quantities as wanted for immediate use. Take as much water as may be wanted, say two quarts; four large spoonful of molasses, same quantity of good vinegar, and half a spoonful of fine ginger; mix these well together in the water; then to this mixture add half of a large spoonful of saleratus in powder, and stir and drink when in a state of effervescence. This will be found not only a delicious drink in warm weather, but also a healthy beverage. The proportions of the articles, to be more or less as may be the quantity of beer wanted.

SAUSAGES.

Proportion your meat about half fat and half lean; cut it fine; then to one hundred pounds of meat add two and a quarter pounds of salt, ten ounces sage, and ten ounces of pepper made fine. Warm the meat, and mix them in thoroughly and stuff them, and the thing is done right. If any wish to keep them through the summer good and fresh, put them in a clean firkin, warm fat and pour in until you cover them; cover and set them in the cellar, and they will keep good the year round.

ANOTHER MODE.

Prepare the sausage meat in the usual way. Then, instead of putting the meat in skins, prepared from hog's

entrails, make bags of white clean cotton or linen cloth—as large say, as a man's arm, larger or smaller, as may suit, and of convenient length, say about a foot long—and put the sausage meat in these bags, and hang them up to dry. In this way you save much labor in preparing the skins, and considerable in cooking: slip off the bag from so much as is needed, and cut the sausage into slices of sufficient thickness for cooking.

CORN MEAL.

Corn meal should never be ground very fine. It injures the richness of it. Try it coarse. This is the reason why western “dodgers” are so good.

RICE.

Rice is often over-boiled. It should never be boiled in more water than it will absorb while boiling. Put two cups of rice in three cups of water, and in eight minutes after it commences *boiling* it is done.

DIRECTIONS FOR FULLED CLOTH.

BY J. M. HURD.

The chain or warp should be twisted as even as possible, and all of one kind of wool. The filling should be twisted even also, but not so hard as the warp. The filling for each web or piece should be spun by one person, and all of one sort of wool. Pulled wool should not be mixed with shorn, nor coarse with fine—for it will make it cockle or pucker in the mill, as pulled wool fulls much faster than shorn. If it is intended to receive a fine dress, the filling should be of the finest of your wool, spun even, coarse thread, and slack twisted; but if it is to

be merely fulled and dyed, it makes but little difference whether the finest wool is in the warp or filling, except that which is twisted the least will full the fastest.

In weaving flannel to be fulled, it should be layed wide—at least a yard—the wider the better, and well beat up; get in all the filling you can, and then your cloth may be well fulled and still be of good width, so as to cut to advantage.

If you wish linsey fulled, observe the same rules as to the filling, as for flannel; but it makes no difference whether the wool is coarse or fine, so it is all nearly alike.

If you want to put pulled wool into the same piece or web with shorn wool, fill it on to one end, so that it can be cut off if it is likely to be troublesome in fulling.

It is common in some places for people to dye their cloth before it is fulled; but it is a bad practice—it fulls much harder, and a portion of the dye is beaten out in the operation. Again, wool takes dye much easier after being fulled, and make it whatever color you will, it will be much more brilliant if dyed after being fulled.

TO DYE BLACK.

Take a pound of logwood to each pound of goods to be colored. Soak it twelve hours in rain-water; then boil an hour. Strain the water in which it was boiled.

Then take an ounce of blue vitriol for each pound of logwood—dissolve it in sufficient water to wet the goods. Dip the goods in it; when wet, turn the whole into the logwood dye.

If the goods are *cotton* they must be boiled fifteen minutes—taking care to stir them *all* the time. Silk and woollen should *not* be boiled; but should be kept in the water at scalding heat for twenty minutes.

Drain the goods, without wringing them, and hang them up in a shady place to dry. When they are dry, put them into scalding (not boiling) water that has salt in it, say a handful to a pailful of water. Let them stand in this water till it is cold. Then hang them up wet to dry.

Boiling-hot suds sets the color of black silk the best. Sour milk will also do it.

GREEN DYE.

Take half an ounce of Spanish float Indigo, and a pound of oil of vitriol. Reduce the indigo to a powder. Stir these two together, then put in a small piece of pearlash, about the size of two barley corns. It will then ferment. As soon as this ceases, bottle it, and you may use it in twenty-four hours. *This will not answer for cotton goods ;* but will for all kinds of woollens.

When you wish to use the above dye, wash the articles to be dyed till perfectly clear and free from color. Rinse them till they are *entirely free* from soap. If you want your goods of a pale green, put to each quart of warm rain water that is to be used, ten drops of the above mixture. If you wish a dark color, add a few drops more, according to your eye. Put the articles in the water thus colored, and let them remain in a warm place till you see they are right as to color. Drain them out in the shade, and when they are dry, wash them in soap suds.

BLUE DYE.

This is made as above, only using half the above quantity of vitriol.

SLATE-COLORED DYE.

Take sugar-loaf paper with vinegar ; boil it in an iron

utensil, with a little alum to set the color. Copperas and tea grounds make a good slate-color.

A light slate-color, very convenient for emigrants in the country, is to boil white maple bark in clear water, with a little alum. Boil it in a *brass* vessel.

All these dyes should be strained before being used. The goods then boiled in them, as in the case of the green dye.

TO COLOR CLOTH ETC., MADDER-RED.

For ten pounds of flannel or yarn, take three-fourths of a pound of cream of tartar, and three-fourths of a pound of alum; pound them fine and boil fifteen minutes in a little rain-water. Then add a little cold water and put in your yarn or cloth, and boil it three hours, stirring it often. Then take your cloth out and air it well. Throw away the above water.

Next take a sufficient quantity of rain-water, so as not to crowd your cloth; put into it three pounds of madder, and heat it over a moderate fire as hot as you can bear your hand in it. Then put in your cloth and keep it stirring three hours at the same heat. Then take out your cloth, and add to this water two quarts of soft soap, and stir it up well, put in your cloth for twenty minutes, and then it is ready for scouring. The cloth or yarn should be well washed before being put into the first described water, and put into it while wet.

The cost of this coloring will be about six cents a yard for cloth or flannel.

TO MAKE WINDSOR AND CASTILE SOAP.

Take white soap and slice it very thin. Melt it over a moderate fire. When lukewarm, add a little oil of

carraway, or other essential oil, to scent it. Turn it into moulds, and let it remain a week.

To make castile soap, boil common soap in sweet lamp-oil three or four hours.

DISEASES

OF

CATTLE, SHEEP, HORSES, SWINE,

ETC. ETC. ETC.



CHAPTER VII.

THE diseases to which horned cattle are liable, are few and simple, and generally yield to judicious treatment.

There are three departments of practice to which resort is usually had, namely: *Bleeding*, *Physicking*, and *Setoning*.

BLEEDING

Stands first; and should be used in all cases of inflammation.

The following are the chief diseases, says Youatt, in which bleeding is required.

1. Where animals in a thriving state rub themselves until the hair comes off, and the spot is covered with a dry scab; while at the same time the eyes appear dull, languid, red, or inflamed, the breath hot, and the veins puffed up, and considerably larger than usual.

2. In all kinds of inflammatory diseases, as of the *brain*, *lungs*, *kidneys*, *bowels*, *eyes*, *womb*, *bladder*, *shape*, and *udder*, or in swelling of the joints.

3. In the disease called blain, and in which bleeding, not only general but local, and local far more than general, has the best possible effect, the tumefaction usually subsiding almost immediately, and the beast speedily recovering.

4. When the glands or kernels between the jaws, or those of the throat, are enlarged, and especially if they

are only recently affected, immediate recourse should be had to bleeding, for otherwise the lungs will probably become diseased, and dangerous or consumptive hoose will speedily ensue.

5. In bruises, hurts, wounds upon the head, strains in different parts, and all other accidents that may occur to the animal, and in which there is reason to apprehend considerable inflammation, bleeding will be proper.

6. In violent catarrh or cold, bleeding is employed; but, in slight cases, a few fever drinks will restore the animal.

7. The yellows, when attended with feverish symptoms, or constipation of the bowels, requires bleeding.

The manner of performing this operation is too well-known to require any description.

The *Fleam* is an instrument in general use for oxen, and the jugular or neck-vein is that which is mostly opened. Local bleeding is, however, in many cases particularly serviceable. In inflammation of the eye, the eye-vein is frequently cut; in foot-halt, we sometimes bleed at the toe; and in inflammation of the bowels, or the udder, or even of the chest, blood is advantageously taken from the milk-vein.

The quantity of blood that it may be proper to take away at one time cannot here be determined; but must be regulated by the size, strength, and condition of the animal, and the disease under which he labors. In many inflammatory complaints too much can hardly be taken, provided the bleeding is stopped as soon as the patient appears likely to faint or to fall down. A strong healthy beast will bear the loss of five or six quarts of blood, without the least injury. Larger cattle, that are attacked with inflammatory complaints, will profit by the abstraction of a greater quantity; seven or eight quarts may be taken

away with decided advantage : but when it is necessary to repeat the bleeding, the degree of fever and the strength of the beast will regulate the quantity. The blood should flow from a large orifice, for sudden depletion is far more powerful in its operation than when the blood is suffered slowly to trickle down. The blood must *never be suffered to fall upon the ground, but should be received in a measure*, in order that the quantity taken may be known. No absolute quantity of blood should ever be prescribed, but when extensive bleeding is demanded, the stream should flow until the pulse falters, or intermits, or the animal begins to heave violently, or threatens to fall, or other circumstances show that the system is sufficiently affected. The beast should not be permitted to drink cold water immediately after bleeding, nor to graze in the field : the former has sometimes induced troublesome catarrh, and the latter may cause the orifice to open again. If this operation is performed in the summer season, it will be most prudent to fetch the cattle out of the pasture toward evening, in order that they may be bled ; and after that, to let them stand in the fold-yard all night, and drive them back to the field on the following morning.

PHYSICKING,

Is useful, 1st, soon after a cow calves, to prevent the milk fever.

2nd. When cattle have eaten too greedily of clover, or other rich food, they become dull and lose their appetite. A slight purge will generally relieve them.

3rd. When cattle become bound in their body. Give a purging drink immediately, and repeat every twelve hours. A clyster will be useful, if the purge does not answer.

4th. It is proper to purge in cases of "red-water."

5th. In the "yellows," give purging drinks, and tonics.

6th. Whenever external inflammation is great, purging medicines must always be used.

SETONS,

Are useful in various cases, such as black-leg, hoose, joint-evil. Setons cause a discharge of diseased matter, and thus relieve the system of the cause of disease; and also relieve the overloaded vessels in the neighborhood of the seat of inflammation.

MODE OF INSERTING A SETON.

A seton may be made of tow and horse-hair, braided together. This is the best kind of seton. It will answer, however, to use a strip of leather, or a small cord. The length should be about ten inches. Before inserting it, it should be dipped in oil of turpentine. With a seton needle, run it into the upper edge of the dewlap, and out at the lower edge. Then tie a large strong knot at both ends of the seton. In a day or two the matter will begin to run. After it begins to run, the cord should be drawn backward and forward every day, to increase the discharge.

Sometimes it is necessary to create a discharge at once. This can be done by dipping the seton in the following preparation:

Yellow basilicon, one ounce; powdered cantharides, (Spanish flies) three drachms; spirit of turpentine, two fluid drachms.

We shall now proceed to notice a few of the more common diseases of horned cattle, sheep, and swine; with familiar instructions for their prevention and cure.

ABORTION, OR SLINKING OF THE CALF.

The signs of this are as follows: the cow is uneasy, and does not eat. By feeling of the lower part of her horns, they will be found to be hot. She seems to have a *longing* for something, and to act in a strange manner. She should now be bled and physicked. Four to six quarts of blood should be taken from her, and the following purge given:

Epsom salts, one pound.

Powdered caraway seeds, half an ounce.

Dissolved in a quart of warm gruel.

If this does not quiet her, repeat it in three or four days. *It is of the greatest importance that she should be kept in a pasture or stable by herself.*

BLACK FOOT.

This is a new disease in the western country. The distinguished Governor Vance, of Ohio, says no remedy has yet been discovered for it. It is very fatal, producing death in a few hours. It is usually perceived in the fore-leg or foot; the animal becomes almost unable to move; the flesh of the leg turns black, and mortification sets in. In the neighborhood of Plainfield, Illinois, one farmer lost a fifth of his stock by this disease during the past year. A correspondent of that excellent periodical, "THE PRAIRIE FARMER," published at Chicago, gives the following remedy, which it may be well to try; especially as the disease will generally prove fatal, if left to itself.

"Last May, (says the writer,) I had a valuable yearling heifer attacked by the following symptoms: when found in the morning, she was lying down, broadside, where she had apparently lain through the night, or longer, and was nearly helpless. One shoulder was considerably swollen, as far down as the knee-joint.

With the assistance of a neighbor, I raised her, and with considerable urging, induced her to walk slowly a short distance. She scarcely bore any weight on the affected limb, and when she moved it, it produced a slight crackling noise, similar to that produced by wringing one's fingers. She refused food, but took a little salt. There were some sweat-drops on the end of the nose or muzzle. I am thus particular in describing the symptoms, because I don't know *certainly* what the disorder was. Several farmers saw her, and said it was the black-leg, and thought she would die. Others thought she had been bitten by a rattle-snake; and others again, that the swelling was caused by the animal having been hooked by another: but no wound was perceptible. Well, we took a sharp knife, and cut a gash through the skin from the knee-joint upward, about six inches. Under the skin there were numerous little bubbles of air. We bathed the limb in strong brine, and thrust some salt into the wound. Sometimes we bathed it with hot soap and water. The cut discharged continually a thin yellowish substance. She ate nothing for several days, except a little salt, and appeared very dull. After a week or so, however, she began to recover her appetite, eating a little grass, and considerable dry earth, from a small patch near by which had been lately ploughed. She continued to improve slowly, and when nearly well, the leg began to swell below the knee; but this was slight in comparison to the first attack, and finally disappeared of itself. The animal soon improved in flesh, and grew finely through the remainder of the summer.

“Whether the treatment above described was of any service is more than I know. But in the absence of better information, I shall certainly pursue a like course under similar circumstances.”

There is a disease, called by some the *Blood*; the *Blood-Striking*; the *Quarter Evil*, etc., which is most terrible in its effects on horned cattle—like that of violent poisoning. It is almost impossible to cure it; and we hardly think it worth while to state its symptoms and the means used to *try* to cure it.

THE BLAIN.

This is a frequent disease. The animal appears dull and low spirited. Its eyes red, with tears in them. The eyes swell a little. *The principal symptom*, however, is, *blisters under the tongue*, or at the back part of the mouth; the pulse is quicker than usual,* and the bowels are confined. The flanks heave a little, usually. If the beast has had the disease some time, the saliva flows freely, often mixed with bloody, offensive matter. The animal becomes much reduced in flesh and strength; and is in danger of dying from the enlargement of the tongue.

CURE.—The first thing to be done, is to cut the bladders under and along the side of the tongue. This will relieve the beast materially.

If there be much fever, take four or five quarts of blood, and give the following purge:

Epsom salts, one pound.

Powdered caraway seeds, half an ounce.

Dissolved in a quart of warm gruel.

If the fever continues pretty severe, the above medicine may be given once or twice in twenty-four hours, till it subsides.

The mouth should be washed with equal parts of myrrh and water; or a decoction of green tea, so as to heal the

* The pulse of cattle may be the most readily felt at the back part of the lower jaw, where the artery comes down the channel between the jaws, and passes over the edge of the jaw bone. The natural pulse of a full grown ox is about fifty, to fifty-five beats in a minute; but is quicker in milch cows.

ulcers. Thin gruel should be placed near to the animal, if the mouth is so sore that it cannot eat hay, and plenty of gruel administered by force.

Sometimes the animal will become very weak, and lose its appetite. If this be the case, *when the fever is gone*, give it the following :

Gentian root, two drachms.

Tartrate of iron, one drachm.

Powdered ginger, one drachm.

In a pint of gruel.

This should be given twice a day, until the appetite returns and the beast improves.

☞ Be careful that none of the matter discharged from the mouth comes in contact with any sore place, as it may cause ulcers. If ulcers do appear, they may be cured by the application of lunar caustic.

CALVING.

Cows which are shortly expected to calve, ought to be lodged at night in some convenient place under cover, for a week or two before calving, as it might be the means of saving the life of the calf, and perhaps of the dam likewise. The day and night after a cow has calved, she should be kept warm. Let her not be exposed for some time to the dampness of the night.

Cows which are near calving ought to be fed with better and more substantial food than usual. Grain of any kind is now useful, but it should be crushed, bruised, or coarsely ground. If the cleaning of a cow after calving be delayed, it may be promoted, according to Dean's "New England Farmer," by giving her a pail of warm water with some ashes in it; or, according to "The Grazier's Guide," the only thing to be given is toast and weak wine, or good cider or perry. If wine be preferred, mix it with

an equal quantity of water. This toast should consist of four pints of wine and water, and about a pound and a half of bread toastèd.

Inflamed teats should be washed with two drachms of sugar of lead in a quart of water. Should tumors appear, apply a common warm mash of bran, with a little lard.

To prevent cows from sucking their own milk, it is said that rubbing the teats frequently with the most fetid cheese that can be procured, is an effectual remedy

In order that it may be ascertained what is the proper time for cows to go dry previous to their calving, an account should be kept of the time when each cow is put to bull, so that the cow may be dried off in due season. The following prescription for drying off cows is given in Monk's "Agricultural Dictionary."

Take an ounce of powdered alum; boil it in two quarts of milk till it turns to whey: then take a large handful of sage, and boil it in the whey till you reduce it to one quart; rub her udder with a little of it, and give her the rest by way of drink; milk her clean before you give it to her, and as you see need, repeat it. Draw a little milk from her every second or third day, lest her udder be overcharged.

WEANING AND REARING CALVES.

Mowbray says, "The calf may be sold (or taken from the cow) as soon as it has drawn the biestings or first milk, unless some defect in the cow's udder or teats may render it desirable for the calf to suck a few days, in order that the action may clear off any obstructions, for which the butting of the calf's head is generally the best remedy. If intended to be fattened for the butcher, it must be kept in a pen particularly dry and clean; suckled twice a day at regular hours; always have the

first, which is the thinnest of the milk, and not be permitted to overcharge its stomach. Lumps of soft chalk are usually placed for the calf to lick, as an absorbant to neutralize the acidities engendered in the stomach from feeding on milk. It seldom pays to fatten a calf beyond ten or twelve weeks.

“A calf may be weaned by being gradually accustomed to suck milk in a pail through the fingers. Many are reared on very little milk mixed with hay tea, linseed, or other slops; fed on straw in the winter, and in summer on the common: such cannot be expected to turn to much account. The best cattle are reared from the teats, well wintered in good shelter, and full fed until they attain their growth. Warmth and dry lodging, are of the utmost consequence to the improvement of all young animals. Calves may, however, be reared to good profit, by being suffered to suck a very moderate quantity daily, the bulk of their food consisting of skim-milk, thickened with oat or wheat meal; their winter food being carrots or Swedish turnips sliced, and cut straw, with a small quantity of hay, daily.”

“The Grazier’s Guide,” observes, “If the calf be intended for the butcher, it may be taken from the cow in about a week or ten days, and fed the remainder of the time by hand; but the time of taking the calf away must be determined by the state of the cow’s udder; for unless that be free from kernels and indurations, the calf must be allowed to suck, as the jolting of its head is the means of healing or restoring the udder, and preventing the downfall or inflammation in this part, which might cause much trouble, and even endanger the life of the cow.

“But if the calf is intended to be reared, it should not be weaned until at least six weeks, or even two months old, whether male or female. For such, there is no food

like the cow's milk ; and if she does not yield a sufficient quantity, that of another ought to be had recourse to. It is an incontrovertible fact, that the longer a calf sucks, not only the larger and stronger will it become, but it will also acquire a much better form and more robust health."

Calves which come early, should be preferred for the rearing. Those which come late, do not acquire sufficient strength to bear the cold of winter ; they languish, and are reared with difficulty. Calves should not be weaned too suddenly, but by little and little. The less they are able to eat, the more they should be allowed to suck ; after a while they may be brought to take it from the pail. This is done by placing the hand in the milk, with the palm upward, and under the milk, while the fingers are raised above the surface of the milk for the calf to lay hold of with its mouth, which it does very readily, and sucks up the milk with great ease.

When they are completely taken away, they should be fed with a little bran, and some of the most soft and fragrant hay of the second crop ; they should be allowed plenty of the skim-milk, and now and then a little water in which barley has been boiled and broken up, or a little buttermilk occasionally. There is at first some difficulty in bringing them to drink, but a little perseverance will accustom them to it.

Moderate warmth and *dry lodgings* are of the utmost consequence to young calves ; and if we would turn them to any good account, they must not be stinted either in these or in their food. Calves which have recently been weaned and are not at pasture, should be fed often, at least three times, and it is better five times a day. As soon as they are fit to follow the mother they should be let out, as they are greatly benefited by air and exercise. Calves sometimes require a habit of sucking one another, of which trick they may be broken by separating them.

Calves cannot be kept too clean, nor have fresh litter too often. If they are suffered to lie on their own dung and urine, they will become mangy, and scarcely ever thrive. They are subject to several disorders, such as diarrhea, dysentery, costiveness, etc. As a means of preventing the greater number of the diseases to which they are liable, the following rules are prescribed in "The Farmer's and Grazier's Guide."

1st. Let the young calf suck the first milk. This will cleanse the bowels, and prevent costiveness.

2nd. Let it suck from its mother at least two months, and then wean it gradually.

3rd. Let its first food be such as is easy of digestion, and let it have plenty of sweet skim-milk, and good hay.

4th. Keep it very clean, rubbing it well, occasionally, with a wisp of hay or straw.

5th. Keep its stable clean, and perfectly free from all impurities.

6th. Let it have gentle exercise; the best will be, following the mother in the meadow or pasture.

7th. Do not stint it either in good food or good drink, and change its litter often enough to keep it clean, sweet, and dry."

CALVES; THEIR DISEASES.

DIARRHEA.—This disease is common with young calves; at the time of weaning, especially. Weaning and change of food should not be too sudden.

New milk should be used with skim-milk or gruel, whichever is to be substituted for the mother's milk; and this done gradually, making the new food come naturally to the calf. If the calf have a bad looseness of the bowels, it should be attended to *at once*. Give two ounces of castor oil; or four of epsom salts. Then give—

Prepared chalk, two drachms.

Powdered opium, ten grains.

Do. ginger, half a drachm.

Essence of peppermint, five drops.

In half a pint of gruel, twice a day. The above is a dose for a calf under two months old.

An old New-England farmer gives the following recipe :

“Put into a suitable bottle about half a pint of good cider. Then open a vein in the neck of the calf, and let into the bottle about the same quantity of blood. Shake it well together, and before it has time to thicken, put it down the calf's throat, which is easily done with the bottle. In thirty years use of it, I have never known it to fail in effecting a cure, by once giving it, except in one instance, and then a second dose proved effectual.”

COSTIVENESS.—When it occurs in calves but a few days old, the cure will be almost impossible. Epsom salts, dissolved in warm water, are recommended. The first dose may consist of two ounces of salts, in two or three quarts of water; to be continued in ounce doses every six hours, in same quantity of water. If the calf is two or three months old, the first dose should be a quarter of a pound of salts in a gallon of warm water. *Costiveness is exceedingly difficult of cure*; and the farmer should be very careful to *prevent* it. Whenever the dung is perceived to be a little too hard, a mild purge should be given.

THE HOOSE.—This is a bad disease in calves, speedily resulting in death. As soon as the calf is observed to cough considerably, he should be put into a dry, warm stable. A light bleeding, and a small dose of physic will now be good, and probably cure the patient. Sometimes this disease is prevalent in certain neighborhoods, and carries off many calves.

Should the animal get rapidly worse, and his cough be very distressing, the following will be a good medicine, if the calf be six or eight months old :

Oil of turpentine, one ounce.

Linseed oil, three ounces.

Powdered ginger, one drachm.

To be taken once a week.

Some people use half a pint of lime-water every morning, followed by a table-spoonful of salt, the same afternoon. This is considered a good remedy, and is easily procured.

CANKER.—This is known by soreness of the mouth, which prevents the animal from eating as much as usual. Little pimples are seen about the gums, and the animal grows poor. Sometimes the tongue and gums are swollen, and the calf is feverish.

Give at once one or two ounces of epsom salts, daily, until it is better ; washing the mouth in a solution of common alum, say half an ounce of alum to a pint of water.

TO PREVENT CALVES FROM SUCKING.—Most persons are aware that some calves, when they wish to have them weaned, are disposed to continue the habit of sucking, and in this way give much trouble. To prevent this, take strong old cheese, of which make a paste, and apply the same to the cow's teats.

SCOURS IN CALVES.—When the calf is attacked, it should be put in a warm, dry stable, and not be permitted to suck more than half the quantity of milk it is wont to do ; but should be put to the cow regularly three times a day. Make a tea of equal portions of white-oak, beech, dogwood, and slippery-elm bark ; and give small doses twice a day, and the calf will soon recover.

COLD, COUGH AND CATARRH.

SYMPTOMS.—The animal is dull and stupid. Eyes weep; muzzle dry; hair sticks up; appetite bad; milk fails. Pulse sixty to ninety. Bowels costive.

TREATMENT.—Take from it six quarts of blood. Then a purgative as follows:

Epsom salts, one pound.

Powdered caraway seed, half an ounce; dissolved in a quart of warm gruel.

Afterward give the following, night and morning.

Tartar emetic, one drachm.

Powdered digitalis, half a drachm.

Nitre, three drachms.

Mix in a quart of warm gruel. If the bowels get costive, repeat the first dose.

House the animal, and give it a mash of bran, if there be little or no fever. Continue the above treatment, till the muzzle becomes cool and moist, and the pulse down to fifty or fifty-five.

CHOKING.

If the object which causes choking be so far down that it cannot be reached by the hand, it must be forced down the throat. To do this, give the beast half a pint of oil; then put a gag in its mouth; then take a flexible rod of some kind, (a whip-handle will answer,) pass it gently down the throat till it touches the object. Now press firmly and steadily upon it, until it is removed.

In Spain, it is a common-practice, when a beast is choked with apples, potatoes, and the like, for two or three men to sieze the beast, and lay its neck over a log of wood, and then strike the apple a smart blow with a billet of wood, so as to crush it. This must be done cautiously, however.

COW-POX.

SYMPTOMS.—Small sores on the teats, which, when broken, discharge a thin matter. These are surrounded with inflammation. The sores become ulcerated, if neglected. The animal shows signs of fever; eyes heavy; milk lessens.

TREATMENT.—Open the bowels with one of the epsom salt purges before named. Then give:

Tartar emetic, one drachm.

Powdered digitalis, half a drachm.

Nitre, three drachms, in a quart of warm gruel.

Wash the teats in warm water, and apply, night and morning, the following wash:

Sal ammoniac, quarter of an ounce.

Vinegar, half a pint.

Camphor spirits, two ounces.

Goulard's Extract, an ounce.* Mixed and kept in a bottle for use.

GARGET, OR DOWNFALL IN THE UDDER.

SYMPTOMS.—The udder becomes swollen, hard, and hot, and sore to the press. The milk is less in quantity, and sometimes mixed with blood and matter. Sometimes the hind legs are swollen and inflamed, especially the hip joint, hock, and fetlock.

TREATMENT.—Take the animal out of pasture. Bleed three to five quarts. The next morning give the epsom salt purge. Feed light for a couple of days on mashes and a little hay; and when sent back to pasture, send to

* GOULARD'S EXTRACT is thus made: sugar of lead—one ounce; alcohol—one ounce; water—one quart, mixed together..

A TOLERABLE SUBSTITUTE FOR THE ABOVE, is as follows:

Bruised oak bark—six ounces; boiled in two quarts of water till it is reduced to three pints. Or: alum—quarter of an ounce; water—one quart.

a light one. The diseased parts of the udder should be rubbed with the following ointment :

Soft soap, one pound.

Mercurial ointment, one ounce.

Camphor, melted with alcohol, one ounce ; rubbed well together.

During the whole progress of the disease, the bowels should be kept loose with the epsom salt purge.

THE HOOVE, HOVEN, OR BLOWN.

CAUSES.—Sudden change of pasture, from a poor to a rich one. Too many turnips, too much clover, etc., etc., etc.

SYMPTOMS.—The beast swells ; breathing hard ; much pain. Difficulty of breathing, and swelling increase.

TREATMENT.—Medicine is of but little use. *Do not drive the animal about ;* be very particular on this point. Some people plunge a lancet, or a small pocket-knife into the animal, midway between the haunch bone and the last rib. This is called a good remedy. The wound is left open a day or two to suffer the gas to escape.

TO PREVENT HOVEN.—At times when cattle are particularly liable to hoven, on a change of pasture or food ; and early in the spring, and about the time of early frost in the autumn, take a bushel of fine wood ashes and a bushel of common salt ; mix and use in the usual manner of salting cattle. Use this mixture for a few days. This is a capital preventive.

INFLAMMATION OF THE BOWELS.

SYMPTOMS.—The animal is uneasy, getting up and lying down often ; strikes his belly with his hind feet ; bowels costive ; the dung, if any is voided, is hard and

covered with mucus. The urine voided with pain, pulse quick, and flanks heave. It is distinguished from colic by the fever, dry muzzle, and hot mouth. The attack is sudden; attended sometimes by trembling, deafness, and insensibility to the voice or the whip.

TREATMENT.—Bleed six or eight quarts; then give the strongest purges. If the *croton* nut can be had, make the following physic:

Epsom salts, half a pound.

Croton nut, ten grains.*

Rub the nut down to a fine powder, and give it in a half a pint of warm gruel, and immediately afterward the salts in gruel.

It may be necessary to repeat the bleeding and purging. Castor oil may be given in large quantities for a purge.

LICE ON CATTLE.

Some prefer an ointment, others a wash: we give both to the reader.

OINTMENT FOR LICE.

Lard, seven ounces.

Mercurial ointment, one ounce.

Mix together, and rub wherever the lice are.

WASH FOR LICE.

Corrosive sublimate, two drachms.

Rub it down in alcohol, two ounces.

Water, one pint.

Feed the beast well.

It is said, on good authority, that dirt or fine sand sifted into the hair, will entirely destroy vermin on cattle. It may be well to try it.

* If the Croton nut cannot be had, use large quantities of Castor oil.

MAD ITCH.

The effect upon cattle following hogs that are fed on green corn, cut up and thrown to them when in the roasting-ear state, is very fatal. The hogs will chew the corn-stalk, and extract all the sap, and then throw it out. These fibres thus thrown out, with all the sap extracted, will be eaten voraciously by the cattle. It contains no nutriment, to give fermentation to enable the animal to ruminate; and it thus lays dormant and inactive in the many folds, or stomach; becomes perfectly compact and indigestible; creates fever, and in the end destroys the animal.

Cattle destroyed by eating these fibres of the corn-stalk, will first show the symptom by a wild stare of the eye; and in its first stages will frequently become cross, and even attack their keepers. They will then begin to rub the nose and head against the fence, until the skin and flesh are torn and lacerated in a most frightful manner, and in the end die in great misery. I have lost many fine cattle in this way, and have never been able to save one thus afflicted. The entire symptoms are similar to what is called the mad itch, which I have no doubt is created by the same cause, taking into the many folds indigestible matter, incapable of fermentation and rumination.

THE MANGE.

Cattle that are kept well, and properly taken care of, will not have this disease, unless they take it by contagion.

SYMPTOMS.—Sometimes there is an eruption on the skin; the animal appears hide-bound; the hair is dry and wiry; the hair comes off easily; the animal is constantly rubbing itself; a white scurf appears on the skin.

TREATMENT.—Make an ointment as follows :

Flour of sulphur, one pound.

Mercurial ointment, two ounces.

Common turpentine, one pound and a half.

Lard, one pound and a half.

Melt the turpentine and the lard together, and stir in the sulphur when these begin to cool ; afterward, rub in the mercurial ointment, by placing the whole mass on a flat stone. This precaution is necessary to prevent the hand coming in contact with the mercurial ointment.

This ointment should be rubbed in whenever there is mange. No danger will happen if the beast do not take cold.

Some medicine should also be given. The following will be good :

Flour of sulphur, two ounces.

Black sulphuret of antimony, one ounce.

Nitre, two ounces.

Powdered ginger, one ounce.

Divide these into four powders ; give one every other morning, in gruel.

RED WATER.

SYMPTOMS.—Purging, followed by costiveness ; appetite poor ; pulse and breathing quick ; pulse often weak ; the insides of the nostrils and eyelids pale ; legs cold ; milk small in quantity ; the urine becomes brown, and sometimes black.

TREATMENT.—Change pasture : if the beast be quite ill, house it, and feed on light mashes and a little hay. Give the following :

Epsom salts, one pound.

Powdered ginger, half an ounce.

Carbonate of ammonia, half an ounce.

Mix in one quart of boiling water.

Divide the above into four parts, and give it once in six hours.

As soon as the bowels are well open, give the following, every day :

Powdered ginger, one drachm.

Powdered gentian root, one drachm.

Spirits of nitre, one drachm.

Mix in a pint of gruel.

Sometimes it will be necessary to take away a little blood, before giving any medicine. If the urine should continue to be black, an ounce of nitre may be given with the above drink.

The following, taken from the London Farmer's Journal, is highly recommended ; it may be well to try it.

“ For a full grown cow dissolve two pounds epsom salts in two or three pints of boiling water, and give it when new-milk warm ; then keep her six or eight hours without food. If then the salts should have not operated, give four or five quarts of warm water, and drive her about gently ; in a quarter of an hour it will operate ; then give her as much warm water as she will drink, and turn her out to graze, if the weather be dry. My brother, J. Waistell, of West Park, has used the above remedy for upward of thirty years, and has not in all that time lost one beast by the red-water. Before he commenced using it, he almost invariably lost cattle annually by that disease. His cattle were less frequently afflicted than formerly, which he attributes to his having underdrained a great part of his farm, which was wet and boggy. The remedy was communicated to him by a relation, Mr. Kendall, a cow-keeper, who for many years kept many cows, and occupied part of Mary-le-bone Park, at London.”

SCOURING ROT; OR ROT.

This is a very prevalent disease in cold wet lands. It is an inflammation of the large intestines.

SYMPTOMS.—Painful attempts to void dung; which is thin, offensive and slimy. The beast is in pain, and restless; a rumbling noise is heard inside; the animal gets thin. By and by the dewlap hangs down flabbily; the dung is very liquid and offensive, and appears full of bubbles; the hair is wiry and sticks up; much fever; pulse quick, eyes inflamed and dull.

TREATMENT.—House the beast at once. Keep on dry food. If poor and weak, a thick gruel should be given three times a day made of oats, barley and beans, ground, with a little linseed cake added. Bleeding *must* be resorted to, proportioned to the feverish symptoms. Now give:

Epsom salts, one pound.

Powdered caraway seeds, half an ounce: in a quart of warm gruel.

In a few hours give the following:

Prepared chalk, two ounces.

Powdered oak bark, one ounce.

Opium, two scruples.

Powdered ginger, two drachms; in a quart of warm gruel.

If the disease does not seem better, the above may be used once or twice a day for three days; if it then continues bad, give the following drink twice in twenty-four hours, for a week:

Mutton suet, one pound.

New milk, two quarts.

Boil them together till the suet is dissolved, then add

Powdered opium, half a drachm

Powdered ginger, one drachm.

This is an obstinate disease, and may prove fatal, no matter what you do. *The greatest care must be taken until the beast is recovering*, both in the food and drink of the animal.

STAGGERS.

SYMPTOMS.—Dullness ; a desire to sleep ; reeling and staggering.

TREATMENT.—Bleed ; give the epsom salt purge, (page 187) and continue till the bowels are opened thoroughly. This will usually give relief.

TREMbles.

This extraordinary disease prevails in some regions of the West. It is a most alarming one.

SYMPTOMS.—In the earliest stages of this malady, in the cow, it may not display its existence, if the attack be not violent and the animal left to itself ; for in the beginning, as in all stages of the disorder, the appetite seems to be unimpaired, and the thirst not increased. Even in this early stage, not less than the more advanced, appears, however, to be attended with constipation of the bowels. The animal at length begins to mope and droop, to walk slower than its fellows, and to falter in its gait. If, under these circumstances, it should be driven, and attempt to run, the debility and stiffness of its muscles are immediately apparent. It fails rapidly, trembles, pants, and sometimes seems blind, as it runs against obstacles, but this may arise from vertigo ; at length it falls down, lies on its side quivering, and is not, perhaps, able to rise for several hours, sometimes never. Now and then, the quivering amounts to a slight convulsion. When the disease is not violent, the animal, after a longer or shorter period, is again on its feet ; but its capacity for muscular

effort is greatly impaired, and, if hurried in the slightest degree, it is seized with trembling and stiffness, and may even fall again. Of the state of the circulation, when it lies seriously ill, but little is known, as the pulse has not been inspected. One observer perceived that the nose of a heifer was hot, but others have found that part and the skin generally cool. Perhaps their observations were made in different stages of the disease. While lying unable to walk, the animal will still eat freely, and also take drink, but does not seem to have excessive thirst. Its costiveness continues to the last, when the malady goes on to a fatal termination. Of the symptoms which precede dissolution, we could not obtain a satisfactory account. Our witnesses generally declared, however, that the abdomen does not swell in any stage of the disease. When it assumes a chronic form, the animal is liable, for weeks and even months, to muscular infirmity under exercise; looks gaunt and thin, its hair assumes a dead appearance, and sometimes falls off in considerable quantities, especially from the neck.

TREATMENT.—“We met with no medical gentleman,” says Dr. Mac Ilhenny, “who had subjected animals laboring under this disease to a systematic, or even varied, empirical treatment. All the people of the district have one and the same indication to fulfil, that of opening the bowels. When this can be effected, the animal, they say, scarcely ever dies—when it cannot, death occurs. For the fulfilment of this indication, epsom salts have been administered in very large quantities, even to pounds, but without effect. Drenches of lard and various mixtures have also been given, with no satisfactory result. Judge Harold, near South Charleston, has exhibited calomel, followed by lard—no essential benefit. Dr. Toland has administered the oil of turpentine, in doses of eight,

twelve, and sixteen ounces, without advantage. An opinion is prevalent, that drenching animals injures them by causing them to struggle. On the whole, we found among the people of the district a total want of confidence in all kinds of cathartic *medicines*; and an exclusive reliance on *Indian corn*. Some preferred old corn, some new, and others that which had been frost-bitten. This is fed to all those species of animals that are accustomed to eat it, and is said never to be refused. The more the animal will eat, the greater is the hope of the owner. It is said to produce *purging*, when every other means have failed, and then it is affirmed, recovery is almost certain. On these points we found but one opinion in the district. Several of its physicians, after trying other things, had, with the people, settled down on this.

“We found *blood-letting* not in favor. Dr. Toland supposes it has, generally, been employed at too late a period. Many non-professional persons spoke of having resorted to it without advantage, and some thought it had done harm.

“Throughout the disease, rest is considered a *sine qua non* to the favorable effect of any measure, and of itself, in mild cases, sufficient; that is, if they be not aggravated by exercise, the disease will wear itself out, or spontaneously subside.”

YELLOW.

SYMPTOMS.—Dullness; loss of appetite; the beast desires to be alone; milk decreases; bowels costive; front teeth sometimes loose; the whole frame has a yellowish hue, like the jaundice in man.

TREATMENT.—If *the pulse is strong and quick*, bleed moderately, but not otherwise. Give the epsom salt purge, (page 187,) keep the bowels open by half-doses of the

same as occasion may require. While you do this, give every morning the following :

Powdered gentian root, half an ounce.

Powdered ginger, one drachm.

Epsom salts, two ounces.

In a pint of warm gruel.

At night, give

Calomel, one scruple.

Opium, one scruple, in thick gruel, *well mixed*.

After the yellowness is gone, give the above gentian root dose twice a week for a month.

HORN AIL.

The following is from the pen of a distinguished Veterinary surgeon, and is worthy of particular notice. We copy it from the "Farmers' Cabinet:—"

HORN AIL.—Having persuaded myself that the practice of boring horns and applying spirits of turpentine, etc., in the disease called Horn Ail, (which is so very prevalent in America,) is entirely wrong in principle, and has the most pernicious consequences in practice; I deem it not improper to recommend, by the means of your valuable periodical, a system of cure by which, during a long veterinary practice, both in France and Philadelphia, New-York and Harrisburgh, I have been successful in most cases; while, by the common way of proceeding, *no animal is saved*, some either not having been attacked by that disease, or getting cured by nature itself.

This disease is also called the "red-water," or blood in the back or loins, and arises principally from the cattle being at grass during the summer on lots which are very dry and without shade, and from their being exposed to excessive heat of the sun, and to great cold in winter time; there are various other causes, as moory pastures,

moist weather, etc., to all which cattle in this country are generally exposed; sour and mouldy hay, and the exclusive feeding on corn-stalks, also contribute a good deal to this disorder.

As this disease is of an inflammatory character, the application of spirits of turpentine and the like, which produce inflammation, is entirely wrong. This is shown by the strong throbbing of the heart, and the mixture of the urine with the blood. If you stir with the forefinger in the nostrils of the animal, a good deal of blood will be discharged from them, and if you insert your hand into the straight gut, you may bring out whole lumps of blood. Boring the horns is, at most, curing *symptoms* and not the *disease*; the farmer is unfortunately confirmed in this proceeding by the fact, that matter sometimes is discharged from the bored horns; but it is neither recommended by any experienced veterinarian, nor mentioned in any scientific work on the veterinary art. I therefore feel myself bound to recommend to every owner of cattle the following mode of cure, tried a good many times by me with success:

When an animal is observed to be suffering from this disorder, one or two quarts of blood, according to the size of the animal, are to be drawn immediately from a neck vein; then two table-spoonsful of the following powder are to be given three times a day, the powder being previously dissolved in a pint of lukewarm water; this is to be continued until the animal recovers.

Glauber salts, six ounces.

Cream of tartar, two ounces.

Purified saltpetre, two ounces.

Powdered root of althea, one ounce and a half.

It is necessary besides, to rub the animal frequently during the disease, principally on the back. But if the

animal should be costive, either of the following clysters is to be given:

Take a handful of camomile flowers, two handfuls of flax-seed; boil them in two quarts of water, strain them, and add eight ounces of linseed oil and three table-spoonsful of common salt. - This clyster is to be applied by means of a syringe.

Should these articles not be at hand, take one quart of wheat bran, pour two quarts of boiling water on it, strain and add eight ounces of flax-seed oil, and two ounces of common salt. This clyster is to be lukewarm when applied to the rectum, or straight-gut, by the means of a syringe or a fit funnel.

MURRAIN.

A correspondent of the New-Genesee Farmer recommends ashes to be given to stock as a preventive of murrain. Wm. Wallace, of Barcelona, Ohio, says he thinks saltpetre much better—says a piece about the size of a large kernel of corn should be given once a week. A neighbor of his has used this mode of prevention for twenty years, with almost entire success.

He further says, "When cattle are attacked with this deadly disease, I would recommend giving them, say, two ounces of gum gamboge, dissolved. This is a powerful physic; and it is very necessary to get something to pass the animal. I believe that the dry murrain, always precedes the bloody murrain, and is the cause of this last and most fatal disorder, which is often quite prevalent in the Western country."

HOW TO ASCERTAIN THE AGE OF NEAT CATTLE.

BY THE TEETH.—The calf is usually born with two fore or cutting teeth, and at a month old, the whole eight are

cut. The age is then guessed at by the wearing down of these teeth until the calf is eight months old, when they begin to become narrower and smaller. At eight months the two centre teeth are smaller than the rest ; and from that time until eighteen months the others gradually diminish, until the whole are very considerably lessened in size and stand apart from each other.

At two years old the two middle teeth are pushed out, and succeeded by two permanent ones ; at three there are four permanent teeth ; six at four years ; and all the eight at five, when the animal is said to be full-mouthed ; but he is not actually so until six years old, when all the eight are level.

A good judge of cattle, will generally determine the age with considerable accuracy for many years after that. From six to nine he will be guided by the wearing down of the teeth, and after that by the diminution in their bulk, as in the milk teeth. At nine the two middle fore teeth are evidently smaller and narrower than the rest ; at ten the two next are so ; and so on until twelve, when, as in the steer of two years old, the teeth again begin to stand singularly apart from each other.

BY THE HORNS.—The surface of the horn continues nearly smooth until the expiration of the second year of the animal's life, when a wrinkle or circle of thicker horn begins to be formed around the base. This is fully completed in a twelvemonth, and another ring then begins to appear, so that if the perfect rings or circles are counted, and two added to them, the age of the beast is supposed to be ascertained. These rings, however, are not clear and distinct, and it is very easy to remove one or two of them with a rasp, at least to the unpracticed eye, when the animal begins to be unmarketably old. In addition to this a well-known fact should be stated, that if a heifer

takes the bull at about two years old, the first ring is formed a twelvemonth before its usual time, and, consequently, she would always appear to be, reckoning by her horns, a twelvemonth older than she really is.

After all, the age, as denoted by the horn, can only be calculated in the cow; these rings do not appear in the ox or bull until the animal is five years old, and then they are most frequently too confused to be accurately counted.

PHYSICKING CATTLE.

Purgings medicines operate by increasing the evacuation of fæces from the bowels, and thus often removing a very considerable source of irritation. They augment the secretion of the exhalent vessels situated on the internal coat of the intestines, and thus, by producing watery stools, lessen the quantity of fluid through the system. They divert the increased flow of the blood from the affected organ, and determine it to the bowels, which is well elucidated in red-water; and they have a peculiar influence on the nervous system, augmenting the energy of the nerves distributed to the intestines, but diminishing it in other parts of the system.

The chief purgatives in use for neat cattle are glauber salts, epsom salts, Barbadoes aloes, linseed oil and sulphur. In obstinate constipation of the bowels, ten or fifteen grains of the farina of the croton nut, freshly prepared, may be added with good-effect. One pound of glauber, or epsom salts, will purge a full-sized beast. Aloes are very properly getting into disuse; they are uncertain in their effect, they require very considerable doses of them to be given in order to act alone, and if they should be received into the rumen they are apt to disgust and nauseate the animal. Half an ounce, or six drachms of them, however, may be added to the salts in particular

diseases. Where there is considerable fever, or the attack of fever is apprehended, there is no purgative so beneficial as the epsom salts. In bad cases, twenty-four ounces may be given at a dose, and eight ounces of sulphur every six hours afterward, until the full purgative effect is produced. Linseed oil is rapidly superseding the more expensive and more uncertain castor oil; the dose is from a pint to a pint and a half. As a mild aperient, and in cases where there is no great degree of fever, and a violent purge is not required, there are few better things than sulphur. Where nothing else is at hand, and the case is urgent, common salt is no contemptible medicine: a pound of it dissolved in water, will produce a fair purgative effect, but it should not be given if the animal labors under a fever. The following are the cases in which purgative medicines are found useful:

1. We have known some old graziers who, when feeding old cows, (during summer) have given them a purging drink about every six weeks, by way of keeping off the downfall, which in general has the desired effect, and has even caused them to fatten more rapidly.

2. A purging drink is very properly given to cows soon after calving, in order to prevent the milk-fever.

3. Neat cattle are naturally of a greedy and ravenous disposition, and their appetite is hardly ever satisfied. Milch cows in particular, if feeding on herbage, or other food agreeable to their palate, will often continue to graze until they are in danger of suffocation. Thus the powers of digestion become over-burdened, and the animal appears dull and heavy, and feverish symptoms are induced. Purgatives will give the most effectual relief in these cases, and if the appetite does not return soon after the physis, a cordial ball will be useful in restoring it.

THE PULSE OF CATTLE.

The blood flows through the arteries by the force impressed upon it by the heart. This is felt in the pulsations of the arteries, which correspond with the contractions of the heart, and indicate not only the number but the nature of these contractions, whether propelling a greater or smaller quantity of blood. By the number and the force of the pulsations, the degree of fever is indicated with considerable certainty. The heat of the mouth, and the base of the horns, will be important guides; but a much safer one, and more clearly ascertaining the extent and the nature of the fever, is the action of the heart faithfully represented by the pulse. Wherever the finger can be placed on an artery that is not too thinly covered by cellular membrane of fat, and that has some firm substance beneath, the pulse may be felt; but most conveniently so where, at the back part of the lower jaw, the artery comes from the channel between the jaws, and passes over the edge of the jaw-bone, to ramify on the face.

The natural pulse of the full-grown ox varies from fifty to fifty-five beats in a minute, but is quicker in milch cows than in oxen, and particularly toward the period of parturition. A pulse much quicker than that here stated, denotes fever or inflammation; while one much slower indicates sluggishness of the circulation, or debility.

In another part of this volume, may be found remarks on the pulse of neat cattle, to which the reader's attention is invited. See index.

DISEASES OF SHEEP.

RED WATER.

SYMPTOMS.—Dullness ; off its feed ; panting : restlessness ; flanks drawn up ; costive at times ; sometimes purging.

TREATMENT.—Put the animal in a dry place ; bleed about a pint, if full grown ; then give,

Epsom salts, one pound.

Powdered ginger, one scruple.

Gentian root, one drachm.

Warm water, two ounces.

Linseed oil, one ounce.

Give in warm gruel—one fourth or one half if a lamb. The belly should be well fomented with hot water.

THE BLOOD.

This disease is well known.

SYMPTOMS.—Dullness ; head hangs down ; eyes heavy and bloodshot ; heaving at the flanks ; difficult to move ; staggering ; stretching out the fore-legs to ease himself.

TREATMENT.—Bleed *instantly* and freely ; at least a full pint. The jugular vein is the proper vein to bleed from. The sheep should be bled until it is evidently weakened by it. Then give two ounces of epsom salts in warm gruel every two hours, till the beast is thoroughly purged. The purging should be continued for two or three days. The bowels well purged, give the following medicine, morning and night, till the sheep is evidently better :

Powdered digitalis, one scruple.

Tartar emetic, ten grains.

Nitre, two drachms, in warm gruel.

THE ROT.

SYMPTOMS.—The first thing which indicates the presence of this disease, is the unwillingness of the affected animal to move about. It lags behind the flock, ascends a slope with difficulty, and has a listless, heavy, pithless appearance. Cough, varying in frequency and violence, but extremely harassing, is present at every period of the disease, and is always increased on the slightest exertion. At first, this is accompanied by expectoration of the mucus of the air tubes; but in no long time purulent matter, indicative of more extensive inroads on the constitution, begins to be coughed up, and goes on increasing in quantity and becoming worse in quality, till the termination of the disease. The wool becomes fine, white, thin, and brittle in the pile, and is easily brought away in masses by the slightest pull. The appetite is, throughout the disease, voracious, and though all the bad symptoms may be present, still the animal keeps up an appearance of plumpness. This, however, is hollow and deceitful; and the rapid loss of flesh which immediately succeeds, shows with what insidious certainty the malady has been progressing. Owing to the falling off in flesh and in fat, the neck appears to have acquired additional length, and the eyes to have sunk within the head. Sooner or later, the skin beneath the neck becomes distended with serous fluid, and from this the disease has acquired the name of *Poke*. The word, however, is far from applicable, as it might, with equal propriety, stand for any other disease attended with dropsical accumulations.

TREATMENT.—*Common salt* is the very best medicine that can be used. Let the animal have constant access to this.

But something more should be done. Evacuate the bowels by an epsom salt purge, and give a table-spoon-

ful of the following mixture, night and morning, for a week :

Common salt, eight ounces.

Powdered gentian root, two ounces.

Powdered ginger, one ounce.

Tincture of colombo, four ounces.

In a quart of water.

After a week, give the above every morning, and at night two table-spoonsful of the following :

Common salt, eight ounces.

Powdered gentian, two ounces.

Powdered ginger, one ounce.

Tincture of colombo, four ounces.

Spirits of turpentine, three ounces.

Mix in a quart of warm water.

ANOTHER RECIPE FOR THE ROT.

Fox-glove leaves, two ounces.

Boiling water, two pints.

Pour the water on the leaves, cover up the vessel, and keep it in a warm place six or eight hours. Then strain it.

Give two tea-spoonsful morning and evening, for six days : then omit it two or three days, and give again.

DROPSY.

When it is the concluding symptom of a disease, it may be reckoned part of the complaint itself, and treated accordingly. Often, however, it is the first thing which attracts the attention of the shepherd, and when such is the case, it will usually be traced to long exposure to cold and wet. In this event, the best plan is to bleed largely, and give two or three smart doses of epsom salts. When it occurs in young lambs, sweet spirits of nitre, given in the quan-

tity of a tea-spoonful twice a day, is found to be attended with the happiest effects. Tapping, or, as it is popularly termed, *stabbing*, or *sticking*, to permit the escape of water, is the cure resorted to in South Africa, when it appears in old sheep, after exposure to rain; but this ought never to be resorted to unless under the guidance of a medical person. It would be much better at once to kill the sheep.

FOOT ROT.

Spirits of turpentine applied to the parts affected, with a feather, twice a day, is recommended.

SORE TEATS.

When a ewe is observed to hinder the lamb from sucking, its teats should be examined. If much inflamed, a poultice should be applied, and the lamb placed under the charge of another nurse. Suppuration will thus be promoted, and the matter may be allowed to escape by making an opening for it at the place it points. If there be only a little tenderness of the skin, all that is required is the washing of it with a solution either of sugar of lead or sulphate of zinc, eight grains to the ounce of water.

BLOWN, OR BLAST.

TREATMENT.—Some persons thrust a small knife into the paunch. This frequently gives relief, but leaves the animal liable to have the difficulty again. If the sheep be driven about *gently*, for an hour or two, it may get relief in the early stages of the complaint.

If not, evacuate with the following gentle purge:

Epsom or glauber salts, one ounce.

Peppermint water, four ounces.

Tincture of ginger, one drachm, or a little powdered ginger.

Powdered gentian, two drachms.

Boiling water, two ounces.

Give every six hours till purged; and half the quantity every morning for four days.

YELLOWS.

SYMPTOMS.—Dullness; yellowness of the eyes, mouth and skin, generally; urine dark at times.

TREATMENT.—As soon as the least yellowness is seen, take the beast to a poor pasture, and purge it with the following:

Epsom salts, two ounces.

Powdered caraways, quarter of an ounce.

Dissolved in warm gruel.

Half-doses of this should be given every morning for a week or more. Should the animal be weak, give,

Gentian, two drachms.

Colombo, one drachm.

Ginger, half a drachm, in warm gruel.

THE SCAB.

This is an infectious disease, and a pest to the shepherd.

SYMPTOMS.—Itching to a painful degree; sometimes the beast tears the wool off in mouthfuls; thin, ragged, mean look. The body often has upon it dry scurf, or red spots; the roots of the wool often matted together.

TREATMENT.—Some persons use tobacco infused in boiling water, at the rate of a quarter of a pound to a gallon of water. Others use mercurial ointment; but probably the best way is, to use an ointment made as follows:

Flour of sulphur, one pound.
Venice turpentine, four ounces.
Rancid lard, two pounds.
Mercurial ointment, four ounces.
Rubbed well together.

Great care should be observed in rubbing the ointment into the body of the sheep. The wool should be parted by the hand, and as thorough an application be made as possible. Continue this treatment till the sheep ceases its violent scratching; using the ointment every other day. There is not the slightest danger in this treatment, and it is usually efficacious.

PURGING.

TREATMENT.—In slight cases, suet boiled in milk is sufficient. If very bad, give once or twice a day the following:
Prepared chalk, quarter of an ounce.
Powdered ginger, half a drachm.
Powdered opium, two grains; in warm gruel, till the disease gives way.

GRUBS.

The grub in the head of a sheep, is the larva or maggot of a fly, which deposits its egg in the nose, generally in the month of August. The egg soon hatches, and the young maggot soon makes its way up into the cavities, called the frontal sinuses, where it attains its growth, causing constant irritation and disease, and not unfrequently death. Arrived at its growth, it falls to the earth, enters it, and in a short time emerges a perfect insect or fly, ready to commence the career of reproduction and destruction. We formerly lost many sheep from the grub, and could find no cure for them, or but very partial ones, after it became evident they were diseased. Our course

was preventive. About the time the fly made its appearance, which is easily known by their exhibiting great alarm, running from one part of the field to another, with their noses close to the ground, etc., we caught one sheep, and with a wooden spatula, or flat stick, rubbed the nose with tar. We then placed tar at the bottom of our salting troughs, over which the salt was sprinkled, and this brought their noses frequently in contact with the tar. This course we found a great preventive. Sheep, during the period they are exposed to the attacks of the fly, should have access to a ploughed field, or if such is not convenient, a few furrows should occasionally be opened in their pastures for their benefit. Inhaling the dust, or rubbing their noses in it, renders the mucus disagreeable to the fly, or enables the sheep to expel the larva when deposited. With these preventives, we have rarely lost a sheep from the grub, and think, that in most cases, they will be effectual.

WINTER-KEEPING OF SHEEP.

The following is extracted from Fessenden's Complete Farmer :

“Perhaps there is no domestic animal that requires more nice and constant attention than the sheep, and no other that will more richly pay for generous keeping. Though he may not be liable to disease, nor require a better quality of food than neat stock, still that management which will keep cattle in good case will not answer for sheep. His habits and mode of feeding are entirely different. For instance, in the winter season, a cow may be kept tied to the stall twenty-two hours out of the twenty-four, and, if well fed three times a day, keep her flesh and get sufficient exercise for her health. Serve a sheep in the same manner, and it would not probably live a

month. It is natural for sheep to move about and change situation. Turn a flock of hungry sheep into a pasture, they will run to the end of it before they begin to eat, feed them in troughs, they will run over all till they come to the last, when they have it in their power. They are almost continually shifting situation from hill to dale, from one kind of food to another; and it is a fact, that sheep will thrive better on two or three different kinds of ordinary fodder, than they will to be confined to one kind that is of a superior quality.

“The proper time to yard sheep in the fall, is while they are yet in good order from fresh feed, and before the frost takes the nourishing qualities out of the grass: but a time in which many sheep are not folded, they are left to nibble over the frozen pastures till they lose the flesh of half a summer's keeping, and which takes half a summer to regain. It is a great error which is persisted in, with an idea to save fodder. But setting aside the injury done pastures by close feeding at this season of the year, the sheep which stray away and are lost, and the time spent in hunting them, which are not idle considerations, the farmer would more than get repaid for his extra fodder, and a few weeks' attention in yarding his sheep sooner, by preserving their health and condition. When they are put in winter-quarters, they require as much variety as possible; not that they want so much room, but they need a number of apartments. Two yards and one shed will do very well for one flock; or what will answer the same purpose, if a large number of sheep are to be kept near each other, have the yards in a row, and one more yard than flocks of sheep. Then, by shifting one flock to the spare yard, it leaves another vacant, and so on. Thus may all be changed, which should be done at every time of feeding. As fast as the yards are empty, the food

should be put into them, and never while the sheep are there. One hundred sheep are enough to be kept together. Cleanliness is of the utmost importance. Their yards should be littered with straw or something of the kind, constantly, or they will be in danger of losing in a degree a relish for their food.

“The next thing necessary is, to have proper places for your sheep to eat hay in, which are the common board mangers, and may make partings to the yards. Take six joists, say three inches square, and four feet long; have the boards of a length, then nail two of them to the joists set up perpendicularly, in such a manner that one joist will be in the middle of each board, and the other two at the ends, and that the top edge of the boards will be one foot from the ground; then nail short boards to the ends two feet and a half long, the width of the manger, the next board on the sides to be placed eight inches from the lower boards; then board it tight to the top of the joists and the manger is finished. A manger eighteen feet long, of this description, will accommodate thirty sheep. Single mangers may be made along the outside fence of the yard, which do not require to be so wide. The great superiority of these mangers over racks is, first, the facility of putting hay into them without dropping it on the ground; secondly, it obviates the danger of hay-seed falling on the wool of the sheep; and thirdly, it prevents any waste of fodder. The next thing after mangers for hay, should be a place appropriated for feeding out roots, which every farmer should raise to a certain extent. Although we cannot turn them to so good an account as the English feeders do, on account of the severity of our winters, still a proportion of them, as food for our stock, is of great importance. In order that the farmer may make the most of his roots, he should have a cellar fixed to re-

ceive them in the fall, without too much labor, and accessible at any time in the winter, without endangering them by frost. The cellar should be placed as near the yard as practicable, with a watering place at hand. A good way of washing roots is, to have an oblong box that will hold two or three bushels, with the bottom perforated with auger holes, and rockers placed on the under side of the box; then, by pouring a little water and rocking them, the dirt will directly wash through the bottom of the box. They should then be cut fine with a sharp shovel, and they are fit for feeding out. Browse in the winter occasionally for sheep is very palatable, and is of considerable use in preserving their appetite, and as a change of food; but care should be taken to select the right kind. There are many kinds of hard wood, of which the bark and buds are very injurious.* The bark of the black cherry eaten by ewes with lamb, is almost sure to produce abortion. Generally, winter-green is to be preferred to any other browse. White and yellow pine are best.

“Regularity in feeding sheep is of prime consequence in cold, dry weather. It is not necessary to feed them oftener than three times a day, if discretion is used in the quantity of fodder. In warm weather, and especially if it is muddy, they should have little at a time, and be fed four or five times a day. Daubenton and others calculate that two pounds of hay are sufficient for the support of one sheep a day, (which, by the way, is not enough.) Calculations of this kind, if made with the utmost accuracy on one, or any number of sheep at one time, will not apply to the one sheep at another; because so much depends on circumstances. A sheep that will eat three pounds of hay in a cold day, will not, perhaps, eat more than two in a warm day following; and still less in a damp

* The wood disease, so much complained of in France, is wholly owing to sheep eating fresh buds.

one. Not that they require so much more food in cold weather than in warm, but that sudden changes affect their appetites and without injuring their health. Again, a sheep of proper form and inclination to fatten, will not need so much nutriment to preserve its health, as one of the same weight of a coarse, rawboned, uneasy make.

From present experiments, the introduction and raising of SHEEP on the vast prairies of the West are to be anticipated, and it would not be surprising if there should be a great change in the territory to which the consumers of wool must look for much of their raw material. Hitherto, the New-England and Middle States have principally furnished the market with wool. But sheep are already beginning to acquire importance in the view of the farmers and planters of the West and South; and if the importation of 1100 merino bucks in a single year into South America, produced such a change in their flocks, why may not equally as striking a result be effected in the Western and Southern States by a similar introduction there? Millions of sheep could be sustained at little expense on the belt of the oak-timber land running through Georgia, seventy miles wide by one hundred and fifty miles long. Indeed, there is scarcely one of the Southern States but would furnish some good section for the keeping of flocks on the uplands. Planters are now also actually beginning to collect their flocks. The sheep-raising States of the North must expect competition. The farmer in the higher and colder latitudes, who has to fodder his flocks for a long winter, will certainly feel the effect of this new direction of sheep husbandry, brought, as he will be, into competition with those who enjoy the advantage of an almost perennial spring. So soon as the planter ceases to be absorbed in the production of cotton, the streams of the South will be lined with mills, and various operations of

machinery. The Northern and Middle States cannot but see that it will do so. There are many locations south and west of the Delaware, where three sheep at least can be kept as cheap as one can on the confines of the Canadas.

Pasturage to almost any extent covers the prairie range, and grass or grain for a short winter's feed, are cut and reaped by machines at a trifling expense. One gentleman, it is stated, in the vicinity of Buffalo, New-York, having a prairie farm in Illinois of some five hundred acres, purchased two thousand sheep, which he placed upon it, under the care of two faithful shepherds. The sheep were kept without difficulty in the best of health, and the proprietor, as the first fruits of his enterprise, received six thousand pounds of good wool, worth thirty cents per pound. The transportation from Illinois to Buffalo cost about one cent per pound. These facts are mentioned, not to discourage effort, but to prepare the producer of wool to meet the condition of things that must soon take place, in a state of general peace and depression of price of all the staple products.

DISEASES OF SWINE.

Swine are subject to a few diseases that are not very easy of remedy. The best preventive is, to keep them clean and cool in summer, and to allow no carrion or filth whatever, to remain in or near their styes. This rule would require to be more attended to in these provinces. The diseases they are most subject to are, pox or measles, blood-striking, staggers, quinsy, indigestion, catarrh, peripneumonia, and inflammation of the lungs. called

hevings. When pigs are sick, if they will eat they will take medicine in their food ; but if they will not eat there is scarcely any help for them. As aperients, cleansers, and alternatives, sulphur, antimony, and madder, are the grand specifics, and are truly useful. As cordials and tonics, treacle and strong beer in warm wash, and good peas and pollard. In the measles, give sulphur, etc., and if the animal require it, cordials occasionally. In staggers, bleeding, fresh air and nitre. In catarrh, a warm bed, and warm cordial wash ; and the same in quinsy, or inflammation of the glands in the throat. If external suppuration appear likely, discharge the matter when ripe, and dress with tar and brandy or balsam. The hevings or unsoundness of the lungs in pigs, like the unsoundness of the liver in lambs, is sometimes found to be hereditary ; there is then no remedy. This disease in pigs is often the consequence of cold from wet lodging, or of a hasty feeding in a poor state ; in a certain state it is highly inflammatory, and without remedy. Uction with train oil, and the internal use of it, have been thought beneficial. Salt, nitre, and sulphur, occasionally given in the food of swine, will be found a good preventive of diseases in these useful animals.

MEASLES.

Occasional doses of sulphur, and lighter food.

KIDNEY WORMS.

We sometimes have a hog or hogs become weak in the loins, and finally drop their hind-parts without being able to raise them again, which, when they move, are dragged along. This, in ninety-nine cases out of one hundred, is produced by what are called kidney worms. To prevent this, or to effect a cure after a hog has, as we say

broken down, requires nothing but a free use of copperas dissolved in water, and mixed with meal so as to form a dough. It will require some six or eight doses to cure a hog after he has got down. All farmers should give this preparation to their hogs several times in the spring of the year—in fact, it is good for them occasionally through the year. I had a hog down last year, dragging itself about for several days before I gave him copperas, which, after I commenced, soon effected a cure, and he was on his feet again.

Copperas will destroy the large worms frequently found in the bowels of a hog, as well as those that are in the kidneys. One ounce, or less, is enough for a hog at a time, and given once a day is enough in any case. Sulphur is also good for hogs, and enough of it will make them shed lice, if they have any, and may be given without any risk of danger; or at least, if there is any danger in giving it, I have never found it out.—*Southern Cultivator*.

J. P. Kirtland, in the "Western Farmer" of Cincinnati, says that "a persevering use of corn, soaked in an alkaline solution, a weak ley for instance," will cure this disease in swine. He says an extensive use of this remedy for many years, enables him to say it is infallible, if it be applied before the animal has lost its appetite.

BLIND STAGGERS.

A correspondent of the "New Genesee Farmer" gives the following remedy for this disease in swine:

"As to the cause of this disease, I am not able to speak decidedly; but suppose it to arise from a determination of blood to the head. Leaving the cause, therefore, to abler hands, I will proceed to the cure. Catch the hog, and with a sharp knife, make an incision through the skin, two or two and a half inches in length, vertically on the

forehead, about one and a half inches below the top of the head, and insert into the wound and under the skin, as much fine salt as possible. Repeat the application hourly, and it will very soon effect a cure."

CARE OF BREEDING SWINE.

Swine kept for breeders should never be shifted from pen to pen a short time before littering. They must not be disturbed or kept in small pens. When they are allowed to roam at large, they generally seek retired places in the woods, and in such cases they are seldom known to destroy their young by design or by accident. Let them have their accustomed residence at such times.

SPAYING SWINE.

Take a crooked stick, in the form of the arm when bent, about eighteen inches long; to each end attach a string, doubled, about eight or ten inches long, which put in a noose over the hind-legs, just above the hocks; hang them up, head downward; tie the mouth to prevent squealing; let a boy stand at their back and hold the fore-legs. Then with a sharp knife split the belly just between the hind four teats, sufficient to insert two or three fingers of the left hand—draw out the pride, and cut it off with the knife in the right hand; then with a large crooked needle and waxed thread, sew up the wound in the following manner: Stick the needle through from outside to inside, then bring out the needle on the other side of the wound, from inside to outside; cut off the thread sufficiently long to tie; repeat the same so as to make three stitches; then tie them, being careful not to draw the stitches too tight, and the work is done.

SALT FOR HOGS.

Hogs, during the process of fattening, should be supplied with salt as often as once a week. It is no less advantageous to them than the ox, the cow, or the sheep, and, when liberally given, is a preventive of many diseases to which, from their continual confinement, and the effects of hearty food, they are inevitably exposed. Some hogs, also, are greatly benefited by it, and will partake of it once or twice as eagerly, and to all appearance with as good zest, as they do of corn or meal. Charcoal is also highly salutary in its influences upon the hog.

BREED OF SWINE.

As much depends on the breed of swine as of any domestic animal, as relates to the profit of keeping. The old-fashioned, thin, long-legged, long-nosed, gaunt-bodied hogs are now, we believe, hardly tolerated. We are but little acquainted with the different breeds of their successors, and shall not, therefore, assume the responsibility of recommending any particular race. O. Fiske, Esq., of Worcester, an able, enlightened, and patriotic cultivator, says: "My hogs are of the Bedford breed, so called in England; and experience has proved to my satisfaction, that this breed is far the best that has been introduced into our country. They are quiet in their nature, fat easy, and with little expense or trouble. I have had some weigh at twelve months old, about three hundred and forty pounds, and a considerable number of eighteen months old, four hundred pounds.

"The marks of a good hog are, a moderate length in proportion to the size of the body; the nose short; the cheek plump and full; neck thick and short; quarters full; hair fine and thin; with a symmetry adapted to the

breed to which it belongs. Above all, it is essential that it be of a kindly disposition to fatten early."

The sow should be selected with great care, broad and straight-backed; wide hips; a great many teats; short legs, and fine bone. It is said that the sow will produce the stronger and better litter if not allowed to breed till a year old, and the boar should not be younger than that age when put to sows. Sows may be allowed to breed till they are six years old, and boars till five; and both be made good pork after this period, by methods which do not require description. One male, according to "The Complete Grazier," should not be permitted to have access to more than ten females in a year. Sows will usually have pigs twice a year, and should be put to the males at such times as will bring one litter in April and another early in September.

"Those sows are accounted the best breeders," says "The Farmer's Assistant," "which have about ten or twelve paps. They should be kept clean and well littered; but should not have too much litter at the time of pigging, lest they overlay their pigs in it. At the end of a week or ten days, they should be let out of their styes into the yard for three or four hours each day. Where several sows are farrowing about the same time, they must be kept in separate apartments in the sty, lest they devour the pigs of each other.

SOWS EATING THEIR PIGS.

Young sows will sometimes eat their own offspring, which may be prevented, by washing the backs of the pigs in an infusion of aloes; and for this purpose, the sows must be watched. It is said that supplying them with plenty of water at this time, will prevent any mischief taking place of this kind.

Raw salt pork, cut in small pieces, and given, will prevent them from eating their pigs. I have seen it given after they had ate two or three of their litter, with good success. But to prevent any mischief, it should be kept by them at this time. A western farmer observes, "I have been careful for about a week before my sows were about to farrow, to give them some butcher's refuse meat, which does not cost much; if easy to be procured, give them a plenty, and I will venture to say that they will not eat their pigs."

DISEASES OF THE HORSE.

The diseases to which this noble animal is liable, are numerous; and we cannot give as much room to this department as the importance of the subject requires. Every farmer would do well to procure a copy of a book called "THE HORSE," by William Youatt, republished from the London edition, and adapted to the American public, by Lea & Blanchard, of Philadelphia. It is a work of great merit.

We annex a few of the most useful hints on this subject.

CURE FOR COLIC IN HORSES.

Dissolve one pound of epsom or glauber salts, and one-fourth of a pound of ground ginger, in three pints of boiling water, and when sufficiently cool, (about blood warm,) pour it down the horse. Keep it well shaken, so that the horse may get all the sediment, which contains most of the ginger. In very severe attacks, bleed in the

mouth, which I think expedites the cure, if done before giving the ginger and salts. This medicine not only cures the colic, but regulates the stomach; so that there is no tendency to colic, any more than if the horse had never had it. Colic in horses is generally brought on by long feeding on corn, or a change of feed, and over feeding and hard driving immediately after, and perhaps too much water, which causes an unnatural distension of the stomach; then inflammation, which is shown in colic, founder, etc. Colic is not as common as many imagine. Horses are frequently driven so long without being permitted to stop, that the great amount of water secreted in the bladder causes excessive pain, and is frequently discharged with great difficulty, and sometimes cannot be discharged at all. We relieved a mare, a short time since, from all the symptoms of a severe colic, by exciting a desire to void the water, by pouring water slowly on the ground near her.

BOTS.

In the "Southwestern Farmer" is given the following mode of treatment for bots, which is there pronounced a sure remedy, if used before the stomach of the horse is eaten through and ruined. Give one quart of warm sage tea; half an hour after, give another quart; half an hour after, give one gill of tar; and half an hour after, give a purgative. The sage being an astringent, will cause the bots to let go of the stomach, and the tar kills them. Prevention is better than cure; but if cure is needed, it is hoped this may be effectual. It has been so in some cases.

FOUNDER.

As soon as you find your horse is foundered, bleed him

in the neck in proportion to the greatness of the founder. Then draw his head up, as common in drenching, and with a spoon put far back on his tongue strong salt, until you get him to swallow one pint. Be careful not to let him drink too much. Then anoint round the edges of his hoofs with spirits of turpentine.

A founder pervades every part of the system of a horse. The phlegms arrest it from the blood; the salt arrests it from the stomach and bowels; and the spirits arrest it from the feet and limbs.

YELLOW WATER.

SYMPTOMS.—A breaking out on the skin, the sores running together, and forming large scabs of matted hair the size of the hand; drooping; swelling and stiffness of the legs; emaciation; enormous appetite; reeling and staggering in walking; great reluctance in moving about, etc.

TREATMENT.—A gill of spirits of turpentine, and a gill of spirits of camphor, shook together in a pint of warm water, every morning for a week.

SWELLINGS.

To scatter swellings on horses or other cattle, take two quarts of proof whiskey, or other proof spirits, warm it over coal, but not to blaze; dissolve it in a pint of soft soap. When cool, put it in a bottle, and add one ounce of camphor. When dissolved, it will form a liquid opodeldoc, and is then ready for application, forming a cheap and useful remedy.

When the swelling is on the leg, or any part that will receive a bandage, such bandage should be applied, and wet with the opodeldoc.

STIFLE.

The following recipe for curing this disease, is given

by a correspondent of the "Cultivator." He says he has sold the recipe for many dollars, and with it cured many horses :

" A handful of sumach bark and a handful of white-oak bark, boiled in a gallon of water, down to two quarts ; bathe the stifle with this lotion twice a day for three days ; then put on a salve made of the white of an egg and rosin, and bathe the same in with a hot shovel two or three times, and the horse is cured."

CURE FOR SPRAINS.

Take one part spirits of hartshorn, two parts neatsfoot oil, and one part of spirits of turpentine. Mix the hartshorn and oil, and then add the turpentine.

SWINEY.

Bathe the part affected with saltpetre and water.

RINGBONE.

TREATMENT.—Take gum camphor, one ounce ; spirits sal. ammonia, two ounces ; mix these together in a junk bottle ; let it stand twenty-four hours, occasionally shaking it together. Then add oil of spike and spirits of turpentine, of each one ounce. Then shake all well together, and it is fit for use. Apply this six successive mornings by thoroughly rubbing it on the part, and apply a hot shovel to cause the same to penetrate more freely, and a cure will generally be effected.

BLACK TONGUE.

A handful of fine salt, rubbed upon the tongue of a horse that has the black-tongue, will cure it in, at the most, two applications.

REMEDY FOR FILM IN THE EYE OF A BEAST.

A correspondent of the "Yankee Farmer," suggests what he considers a new remedy for a film, produced by a blow, or other accidental causes of similar nature, viz: spitting tobacco juice into the eye of the animal. He remarks that he has seen it tried only twice, and each time with entire success; and with very sensible caution concludes, by saying, "the remedy requires to be more fully established." We can assure our cautious friend, that the remedy has been fully established down South for years. The memories of our oldest tobacco-chewers, reach not the antiquity of its discovery. We have often seen tobacco juice spit in a horse's eye when weeping or looking weak, and entire relief afforded.

THE POLL EVIL.

The poll-evil is generally the result of a bruise on the top of the horse's head, which produces a mass of corrupt flesh, that keeps continually increasing for months. For a number of months we have known horses to be afflicted with it before dying. They lose their appetite, become excessively weak, and pine away, and die under its affliction.

TREATMENT.—Cut open the pipe always found in the sore, and put in a piece of saleratus. Two or three applications will cure.

The "Southern Planter" says, that an old gentleman of the highest respectability, called at the office a few days since, to say that he had an unfailing remedy in the little evergreen, commonly called the *ground ivy*. The leaf is gathered and dried before the fire until it can be pounded, when a table-spoonful is mixed with an equal quantity of slacked lime, and the swelling having been laid open to the bone, the mixture is laid on the wound and kept in

its place by a bandage. Mr. Terrill says he has used it himself, and that he has known it frequently used by others, and that in no instance has the first application failed to effect a cure.

SCRATCHES.

Wash the legs with warm strong soap suds, and then with beef brine. Two applications will cure the worst case.

ERRORS IN THE TREATMENT OF HORSES.

When a horse shyes, or shears, at some unaccustomed object, and which all young horses will do, never speak sharply, or worse than that, strike him, if you would avoid his starting the next time he sees the same or any similar object. Almost any horse may be brought to a confirmed habit of shying by such treatment. What should be done, then? Check him to a walk; give him time to see the object, and he will soon take little or no notice of it.

If a horse stumbles or trips, it is a common practice to strike him for that. This will not mend his habits of tripping and stumbling, but will add to them, if he has spirit, that of springing forward with dangerous quickness whenever it occurs; as he will expect the lash to follow, as a matter of course. The remedy, if it can be called one, is to keep an eye upon the road, and where from stones or unevenness the falling is apprehended, tighten the reins and enliven the horse, but never strike him after the accident.

As you would save the strength and wind of your horse, drive slow up hill, and as you would save his limbs, and your own, drive slowly down hill.

Never wash off your horse with cold water when he is

hot, or let him drink it freely in that state. If the water is quite warm, it will not hurt him.

Do not permit the smith, when he shoes your horse, to cut out any portion of the soft part, or what is called the frog of the foot—this is apt to gradually draw in the quarters of the hoof and cripple the animal—and is recommended only by the smooth appearance which it gives to the bottom of the foot, which is more apt to catch a round stone in the shoe than otherwise.

Do not feed with grain, especially corn, when a horse is warm, or very much fatigued; if you do, you may founder and ruin him.

If you want your horse to last, and your carriage also, drive slowly.

Do not keep a horse too fat, or too lean, as either disqualify him for hard labor.

The more kindness and good temper is extended to a horse, the better will he behave in return. Bad temper and bad habits come gradually from bad usage.

DOCKING HORSES.

A handsome flowing mane and tail constitute the most graceful and useful appendages to this noble animal, and are essential both to his strength and comfort. None but a narrow-minded, ignorant man, would have in the first place ventured on such a violation of vested rights; and none but blockheads or jockeys, destitute of the better human feelings, could have perpetrated or tolerated the innovation.

It is impossible that a docked horse should be as vigorous and strong as he would have been, had this operation never been performed. A division of the strong tendons and muscles that have their termination in the tail, must of necessity inflict an irreparable injury. A few years

since, an English gentleman had a fine hunting horse, that would carry his rider over a five-barred gate with ease ; but the tail was not in fashion, it was not carried to suit him, and he had him nicked ; the result was, that when he got well, he could scarcely carry him over two bars. " Thus," said he " I spoiled a good horse, and no wonder ; for the operation weakened his loins, a result that might have been reasonably expected from the severing of two such muscles."

Race horses, we believe, are never docked or nicked. Their muscular powers are all wanted, and that too, where nature has placed them. The hair of the tails is cropped, as any one may see in the fine prints that accompany the English sporting journals ; but the man who should undertake by the use of the knife, and the division of tendons, to improve nature, would justly be considered insane. The same argument that prevents the mutilation of the race horse, should prevent that of the carriage or farm horse. The trifling inconvenience the tail occasions when in the harness, should be tolerated for the sake of the greater beauty of the animal.

PURGING HORSES.

C. W. Gooch, of Virginia, writing to the editor of the Southern Planter, says : " The ordinary means of purging a sick horse are so slow in operating, that, in many cases, they do no good. I send you a very simple recipe, with which some of your readers may not be acquainted, which I have never known to fail, and regard as the best and simplest. I saw it many years ago in the American Farmer, and have tested it :

" Take a piece of chalk about the size of a walnut, pound it in a mortar, or wrap a rag around it and reduce it to powder with a hammer, or anything else ; put the

powder into a quart bottle; pour common vinegar into the bottle, until the effervescence prevents your pouring in more, and (having the horse ready,) drench him with it. But little vinegar can be got into the bottle the first time, so that you will have to pour more into it and drench a second time. Ordinarily, a pint will do. If it does not operate in five or ten minutes, persevere in the dose, and in a very short time the animal will be well again."

MEDICAL DEPARTMENT.

COMPRISING

DISEASES, ACCIDENTS, NURSING,

MEDICINES.

VARIOUS HINTS AS TO THE PRESERVATION OF HEALTH.

ETC. ETC. ETC.

MEDICAL DEPARTMENT

DISSEMINATED

MEMORIAL

OFFICE OF THE SUPERINTENDENT OF THE

CHAPTER VII.

WEIGHTS AND MEASURES.

FLUIDS.

One gallon measure contains.....	8 pints.
One pint.....	16 ounces.
One ounce.....	8 drachms.
One drachm.....	60 minims.

DRY SUBSTANCES.

One pound contains.....	12 ounces.
One ounce.....	8 drachms.
One drachm.....	60 grains.
One scruple.....	20 grains.

SCALE OF MEDICAL DOSES.

If a grown person, may take..... one drachm.

A person from seven to fourteen..... half a drachm.

From four to seven..... one-third of a drachm.

Four years..... one-fourth of a drachm.

Generally speaking, twenty grains of powder fill a tea-spoon. Be careful, however, on this point.

THE suggestions in this department of our work, are in no way designed to take the place of the medical man. Should any of our readers have occasion for medical help, let them at once employ a *judicious* and careful physician. No one gains anything by doctoring himself, if it be possible to procure the services of a regular practitioner. But it very often happens to the resident of a new country, that he *must* be his own doctor; and it seems to us to be

necessary to give a few pages of plain, practical advice, on the more common diseases to which he may be liable

We will begin with

FEVERS.

INTERMITTENT, OR FEVER AND AGUE.

SYMPTOMS.—These are well known, and need not be described.

TREATMENT.—The bowels should be cleansed in the first place. An emetic is perhaps the readiest mode of doing it. The following are each good.

EMETIC.

Ipecacuanha, four ounces.

Lobelia, four ounces.

Blood-root, two ounces.

Pulverized; and a tea-spoonful given in warm tea, every half hour till it operates.

ANOTHER.

Ipecacuanha, fifteen or twenty grains.

Dissolve in warm water; give a table-spoonful every ten minutes till it operates.

ANOTHER.

Tartar emetic; five or six grains.

Dissolve in six table-spoonfuls of warm water. Take a table-spoonful every ten minutes till it operates.

Give warm boneset tea, or warm water to hasten the operation.

If the patient object to an emetic, give a purge. Calo.

mel and jalap, ten grains of each, are good, followed by a mild dose of castor oil or salts. As soon as the fever goes off, and the skin gets to be a little moist, take two grains of quinine every two hours, until you have taken five doses.

It would be well to mix with the first dose or two of quinine, a tea-spoonful of salts, with warm water.

This treatment will generally cure a mild case of this disease.

In more severe cases, it may be necessary to continue the use of quinine; when the fever is off, taking care to keep the stomach clean and the bowels open.

There is a most admirable medicine sold in most of the Western cities, which we can conscientiously recommend for fever and ague, and other bilious diseases. It is the "*Indian Cholagogue*," which is made by Dr. Osgood, of New-York, who has made the bilious disorders of the West his special study. We are no friend to those medicines usually called "*patent*;" but we have had ample opportunity of knowing the invaluable effects of the Cholagogue in bilious cases.

SIMPLE FEVER.

SYMPTOMS.—Sudden chills and heats; dry skin; eyes red and uneasy; tongue white; urine high colored, etc.

TREATMENT.—Bleed freely. If the head is hot and painful, apply cloths dipped in vinegar and water, or iced water. Give a smart purge of calomel and jalap, ten grains of each to a strong adult, less in proportion if the patient be weak. If the body be very hot, sponge it all over with vinegar and water. After the bowels are emptied, give five or six grains of Dover's powder. Keep the patient cool and quiet, and give cooling drinks, to make which see Nurse's Department.

BILIOUS FEVER.

SYMPTOMS.—Low spirits ; yearning ; uneasiness ; depraved appetite ; bad dreams ; alternate chills and heats ; pulse full ; bowels costive ; skin yellowish and harsh ; the tongue is first white, and then brown and furred ; pain in the head, back and legs ; the urine high colored.

TREATMENT.—Bleed freely if the fever is high. Give an emetic, (see page 234.) When this has operated freely, give a dose of calomel and jalap, from ten to fifteen grains of calomel to an adult.

If the heat continue very great, sponge the body with cold water and vinegar. The bowels must be kept loose during the whole of the disease.

It is very important to get the skin in a moist state. To bring this about, ipecacuanha, in doses of one or two grains, may be given ; or, tartar emetic, made very weak in water, given in small quantities at short intervals.

If all these things do not cure, it may be necessary to salivate the patient. To do this, give one or two grains of calomel in syrup, every two hours, till a slight soreness, or copper taste, is felt in the mouth.

Salivation is a *last resort*, however, and should hardly be undertaken without the advice of a medical man.

INFLAMMATION OF THE BRAIN.

SYMPTOMS.—Great pain in the head ; high fever ; pulse high ; eyes red, and unable to bear the light ; restless, unquiet sleep ; sometimes delirium ; tongue red, changing to a dark-brown or yellow ; sometimes the feet are cold ; breathing sometimes difficult.

TREATMENT.—Bleed freely ; bathe the feet in warm water, with a little pearlash or common ashes in it ; apply cloths dipped in vinegar and water to the head frequent-

ly ; a mustard poultice to the back of the neck is useful in bad cases. Purge freely with epsom salts. Keep the patient in a dark room, cool and quiet as possible. If this does not answer, the patient should be blistered, either on the head or between the shoulders. If the former, the head should be shaved. Mustard may be applied to the feet every night.

COMMON HEADACHE.

A foul stomach is generally the cause of this ; and may be relieved by an emetic, followed by a moderate dose of calomel and jalap, and lighter diet for a few days.

BLEEDING AT THE NOSE.

Apply cold water or ice to the back of the neck, the head, and face. Put the feet in warm water, and give some warm herb tea to cause perspiration. Snuff up a little fine dry salt, if the above does not cure.

SCARLET FEVER.

This disease prevails much in many portions of the United States, and should be guarded against.

SYMPTOMS.—Cold chills, succeeded by heat and thirst ; headache ; pulse quicker than usual ; breathing quick and unnatural. In two days, or thereabouts, a prickling sensation is felt, and the skin is covered with a red eruption, which shortly runs together. This will usually be seen first upon the face, breast and arms. In a few days, if the patient does well, the eruption disappears.

The scarlet fever and *measles* have many symptoms alike. The eruption in the *measles* is in distinct spots, and is two days later in its appearance than in scarlet fever.

TREATMENT.—Give an emetic as soon as possible ; then

give a dose of salts. Sponge the body with tepid water. Give cooling drinks, and keep the patient quiet. Give catnip tea frequently, and bathe the feet.

If the throat is sore, gargle with a little alum water, or sage and honey. *A gargle made of cayenne pepper is one of the very best applications.* Do not fail to try it. Mustard plasters may be applied to the feet.

Sometimes the disease runs into a malignant form. It is difficult to give instructions as to the course best to pursue under these circumstances; a physician should be got, if practicable. The following is recommended, on very high authority, in advanced stages of the putrid sore throat, which accompanies the malignant form of the disease. If you cannot get a physician, try it by all means.

Two table-spoonful of cayenne (or red) pepper.

One tea-spoonful of salt.

Half a pint of vinegar.

Half a pint of boiling water.

When cool, strain it, and give two table-spoonful every half hour. We have great confidence in this remedy. If there be difficulty in passing the water, give a few drops of spirits of nitre occasionally, or spearmint tea.

MEASLES.

This disease is usually known to mothers, but we will give a few of the

SYMPTOMS.—Dullness and sleepiness; dry cough; eyes red; great thirst, and afterward a severe cold. On the fourth day small red spots appear on the face, and then on other parts of the body; the face liable to be swollen; the tongue furred and of a whitish color.

TREATMENT.—Give a dose or two of castor oil or salts; in a few hours give a gentle emetic. Bathe the feet in

warm water with ashes in it. After the bowels have been opened and the emetic taken, give saffron, and Virginia snake-root, made into a weak tea; two parts of the former and one of the latter. Keep the bowels open; and keep the patient cool and quiet, with low diet.

WORMS.

SYMPTOMS.—Paleness; bad breath; itching at the nose; constant hunger; slow fever; wasting away of the flesh; cheeks flushed at times, etc.

TREATMENT.—Take

Carolina pink-root, half an ounce.

Senna, half an ounce.

Manna, half an ounce.

Boiling water, one pint; sweeten, and add a little milk; give a gill three times a day.

Powdered charcoal, in new milk, is considered a cure in simple cases.

Another mode of treatment is as follows: Give three or four grains of calomel; the next day, give the same quantity of powdered aloes. Continue this treatment for a week.

SUMMER COMPLAINT IN CHILDREN; OR LOOSENESS OF THE BOWELS.

TREATMENT.—

Rhubarb,

Saleratus,

Spearmint,

} equal parts, say, twenty grains.

Mix in half a pint of warm water, sweeten, and give a table-spoonful every two hours till the disease abates.

Powdered charcoal and magnesia is good.

DIARRHEA IN ADULTS.

TREATMENT.—Give an emetic; then a dose of castor oil, with forty drops of laudanum in it. See that the bowels are kept open by castor oil every day if necessary. If this does not restore the bowels to a healthy state, give the following:

Powdered rhubarb, ten grains

Do. chalk, one scruple.

Do. opium, one scruple.

Divide into four powders, and take one night and morning.

Blackberry syrup is a most excellent medicine in this complaint, and may be had when other remedies cannot. It is made thus:

The bark of the *root*, two pounds; boil it four hours, and simmer down to two quarts; then add three or four pounds of loaf-sugar and half a pint of brandy. A table-spoonful morning, noon, and night.

MUMPS.

SYMPTOMS.—A lump on the throat, immediately under the jaws, sometimes on one side, sometimes on both; attended with more or less fever; the cheeks and face usually swell.

TREATMENT.—If the bowels are confined, open them by castor oil, salts, or any mild purge; drink freely of warm catnip, or balm tea; *avoid the possibility of taking cold*; on this point you cannot be too particular. If there should be a swelling in the breast, or in any other place, apply poultices of cold bread and milk. Try to get up a gentle sweat. Let the diet be low, and drink cooling beverages. Bathing the feet is useful.

INFLAMMATION OF THE BOWELS.

SYMPTOMS.—Sharp pain in the bowels, especially near the navel; belly exceedingly sore, tight and drumlike; frequently there is vomiting of a dark, bilious matter; the urine high-colored; pulse small and quick; low spirits; belching up wind, etc., etc.

TREATMENT.—Bleed freely; bathe the feet and belly in weak warm ley of ashes; give a table-spoonful of sweet oil every two hours. Should the bowels not move freely, give an injection of equal parts of new milk and mucilage of slippery-elm, adding thereto a gill or two of molasses and sweet oil, and thirty drops of laudanum.

When the disease abates, give a clyster of fifty drops of laudanum in flaxseed or slippery-elm tea, morning and night. Keep the patient cool and quiet, on a low diet.

PLEURISY.

SYMPTOMS.—For a few hours preceding the attack, usual symptoms of simple fever are felt, such as chilliness, uneasiness, flushes of heat, thirst, and the like. A smart, sharp pain, like pricking, is felt in the side, particularly when drawing in the breath. There is a difficulty in lying on the sore side. Sometimes there is a bad cough, and tough phlegm raised. The pulse is very strong and wiry.

TREATMENT.—Bleed freely. Apply a blister to the affected side. Bathe the feet in hot water mixed with ashes. Next, give a large dose of salts. If the bowels are confined at any time during the disease, give a clyster of starch in warm water; or slippery-elm tea, or any common clyster. It is all important to have the patient sweat. If this is not brought about by the above course, give a tea-spoonful of sweet spirits of nitre and antimonial wine every two hours.

The patient must be kept on the lowest diet possible. This is a dangerous disease, and the assistance of a medical man should be speedily called.

COLIC.

The common *wind colic* may usually be relieved by a free use of mint tea, or any warming herb drink. Rubbing the belly with hot flannels will do good. After the pain has gone take a brisk purge.

BILIOUS COLIC.

Is not so easily cured. The following are its

SYMPTOMS.—Vomiting a yellowish matter; pain near the navel; great pain all over the belly; feverish symptoms; thirst; costiveness.

TREATMENT.—The first thing to be done is to quiet the vomiting; for this purpose laudanum and saleratus, a tea-spoonful each, may be given in half a pint of warm tea—a table-spoonful every half hour. A strong purge, say calomel and jalap, should be given as soon as the stomach is quiet. If this does not operate, resort must be had to clysters, made of common gruel or flaxseed tea, with a tea-spoonful of laudanum added.

During the severe stages of the disease, the stomach and bowels should be bathed in warm vinegar and water, with an infusion of hops, if they can be got. Drink freely of mint tea. This is a dangerous disease, and a medical man should be sent for if possible.

JAUNDICE.

SYMPTOMS.—The whites of the eyes become yellow, and so does the skin. The urine is yellow and stains a white cloth. The skin is dry, and the appetite fails. The disease is too well known, to need further description.

TREATMENT.—Give an emetic. Pills made of castile soap, two in the morning and two at night for some time, are a good medicine. Drink freely of a decoction ofandelion root, and barberry root bark. Soot tea is good.

CROUP.

SYMPTOMS.—The first sign is difficulty of breathing when asleep, with cough. This increases violently, until the child is almost convulsed. The face becomes flushed, and a peculiar sound is noticed when the child coughs.

TREATMENT.—*Whatever is done must be done instantly.* If taken in season the disease is perfectly curable. The very first thing is to give an emetic. *On this the whole cure depends.* See that the child is made to vomit thoroughly. Antimonial wine, tartar emetic, or hive syrup will be good to produce this,

As soon as the child is relieved of the above symptoms, *danger* is at end; but the bowels should be made to move freely, and great care taken of the patient.

WHOOPIING COUGH.

SYMPTOMS.—It appears at first like a common cold, which increases, attended with thirst, hoarseness, and quickened pulse. In a few days that singular sound called "whooping" is heard, when the child draws a long breath. Immediately following the whoop, the child coughs.

TREATMENT.—Give an emetic at once. Keep the bowels open during the disease by castor oil, salts, or other simple medicines. Bathe the feet every night in hot water. It may be necessary to repeat the emetic, occasionally, if the cough continues severe. A little pargoric may be given at night to allay the cough.

CRAMP IN THE STOMACH.

TREATMENT.—Rub the stomach with flannel till it smarts. Take half a tea-spoonful of red pepper in warm water. Drink freely of herb tea, mint, etc. Bathe the feet in hot water, and apply heated bricks, or bottles of hot water to the stomach.

SALT RHEUM.

TREATMENT.—Make an ointment of narrow dock roots, scabious and sassafras, equal parts. Boil these down strong, and add a pound of lard. Apply the ointment three times a day. Purify the blood with drink made of roots. BRISTOL'S SARSAPARILLA is a capital medicine.

ITCH.

TREATMENT.—Flour of sulphur, two parts ; cream of tartar, one part ; mix in molasses, and give an adult a tea-spoonful night and morning. Children half the quantity. Take sulphur, half an ounce ; lard, two ounces ; mix them thoroughly together, and rub it over the body twice a day.

RING WORM.

TREATMENT.—Tar, one ounce ; mutton tallow, one ounce ; ground pepper, half an ounce.

Simmer these together, and when nearly cold, stir in powdered sulphur to form an ointment. Wash the parts three times a day with castile soap-suds, and apply the ointment.

DIFFICULTY OF URINE.

SYMPTOMS.—A frequent desire to make water, attended with pain, heat, and difficulty in doing so ; a fulness in the bladder.

TREATMENT.—If it arise from simple irritation by blisters, etc., plentiful draughts of warm liquids, as gum arabic or barley water, will be sufficient to remove it. If from any other cause, a bladder half filled with warm water, or cloths wrung out of a warm decoction of herbs, should be kept constantly applied over the parts, and mild clysters of thin starch be frequently injected.

INFLAMMATORY RHEUMATISM:

SYMPTOMS.—Pain, swelling, and inflammation in some one (or several) of the larger joints. The pain shifting from one part to another, all the symptoms of fever, pulse full and hard, tongue white, bowels costive, and urine high colored.

TREATMENT.—Bleed the patient freely, or until the pulse is sensibly affected by it, and purge him with salts and senna. The Dover's powder should be taken to procure sweating, and a very low diet be strictly observed.

If the pain continue severe, and the blood already drawn shows a yellow or buffy coat, bleed again. The inflammation must be reduced, and we are not to lay aside the lancet till that is done. In severe cases it has been found necessary to bleed twice a day, for four or five days in succession. Active purging with salts and senna must not be neglected. When the disease is overcome, if in consequence of the bleeding, etc., the patient is left very low and weak, wrap him up in blankets, give him warm, nourishing food, wine, etc. etc.

CHRONIC RHEUMATISM.

SYMPTOMS.—A chronic rheumatism is nothing more than one of long standing. It is unaccompanied by fever, and makes its attacks on every change of weather, on getting wet, etc. etc. It is frequently caused by inflam-

matory rheumatism, and sometimes seems to exist as a primary affection.

TREATMENT.—There has been found no one plan of treatment in this species of the disease, so effectual as the following: Purge with senna and salts, every other day, rub the parts well with volatile liniment, and use Cayenne pepper and mustard at dinner, in large quantities, and on going to bed thirty drops of laudanum, with a tea-spoonful of the tincture of guaiacum. It is to be recollected, that this is applicable only to chronic cases; if there is fever, etc., it will do much damage. Should there be any cause to suspect that a venereal taint is connected with it, have recourse to the decoction of guaiacum and sarsaparilla. A large blister frequently relieves the whole of the symptoms in the course of a night. The best safeguard against the complaint, is the use of flannel next the skin, winter and summer.

RUPTURES.

Ruptures are tumors caused by the protrusion of a part of the bowels through certain natural openings. They are divided into reducible, irreducible, and strangulated. They mostly occur in men in the groin and bag.

CAUSES.—Straining in any way, as at stool, vomiting, lifting heavy weights, violent exercise, as jumping, running, etc., a natural weakness of the parts.

REDUCIBLE RUPTURES.

SYMPTOMS.—A small swelling, free from pain, and generally soft, the color of the skin over it remaining unaltered. While standing up, the swelling increases, on lying down, it decreases, the patient being able to return the parts himself, while in that position. The swelling is also increased by coughing, sneezing, or straining as if

at stool. If he is flatulent, a rumbling sensation may be felt in it.

TREATMENT.—The patient should place himself on his back, with his head and shoulders a little elevated, draw up his knees to his belly, and (if in this position the parts do not return of themselves,) endeavor to push or knead them up into the belly, through the opening at which they come out, and which, if the tumor be in the groin or bag, is an oval ring or slit in the groin, at the precise spot where the swelling first appeared. When this is effected, he should remain quiet till a truss can be procured, the spring of which must be passed round his body, the pad be applied directly over the spot just mentioned, and held there with one hand, while the other passes the strap into the buckle and draws it sufficiently tight. Having done this, he should get up and walk about. If the swelling no longer appears, the truss is properly applied; if otherwise, take it off, return the parts as before, and apply it again; when, if on rising, walking about, slightly coughing, etc., the parts are found to be well kept up, he may resume his ordinary business. The truss should be worn night and day, as long as he lives.

IRREDUCIBLE RUPTURES.

SYMPTOMS.—A rupture in which there is no pain, yet that cannot be returned into the belly, caused by an increased bulk of the parts, or their having formed adhesions, or grown fast to adjoining parts.

TREATMENT.—A rupture thus situated must be left to itself. The patient should be extremely cautious in his diet, and in avoiding costiveness, by the use of clysters, or if necessary, laxative medicines. He should also be very careful to protect the tumor from blows, always recollecting that it is in danger of strangulation.

PILES.

SYMPTOMS.—A pain in the fundament when going to stool ; on examination small tumors are perceived to project beyond its verge. They are of two kinds, the blind and bleeding. They may also be internal and external.

BLIND PILES.

TREATMENT.—A diet of rye mush and milk, strictly adhered to for a length of time, will very frequently cure the disease. If they project, are swelled, and painful, apply twenty or thirty leeches to them, and cold applications. The common gall ointment is a very soothing application. Balsam copavia, in doses sufficiently large to purge freely, is also highly recommended. A radical cure, however, is only to be sought for in the knife or ligature, for which apply to a surgeon. If the pain is very great, laudanum may be taken to ease it.

BLEEDING PILES.

TREATMENT.—If the bleeding is considerable, inject a solution of alum or a decoction of oak bark. This evacuation is sometimes salutary, and it often requires much judgment to know if it should be stopped or not.

The following remedy is taken from that most excellent work "*The Family Nurse*," by the accomplished Mrs. Childs :

An ounce of low mallows boiled in a pint of new milk till reduced to three gills ; strain it, and add one gill of West India molasses. To be used about bloodwarm, injected daily.

TO DIMINISH INORDINATE INFLAMMATION.

Mix one drachm extract of lead, or solution of sugar of

lead in water, with four ounces of alcohol, and six ounces of water. Make a lotion, which is to be applied to those surfaces where inflammation is very great.

Another method.—Dissolve two drachms of white vitriol in a pint of distilled water. To be applied as above.

MARSH-MALLOW FOMENTATION FOR THE SAME.

Boil together for a quarter of an hour, an ounce of dried marsh-mallow root, with half an ounce of chamomile flowers, in a pint of water; strain through a cloth. The fomenting flannels should be sprinkled with spirits, just before they are applied to the inflamed part.

FOMENTATION OF POPPIES.

Bruise four ounces of dried poppy heads, and then boil them in six pints of water, until a quart only remains after straining. This fomentation is to be applied to inflamed parts, where there is much pain, but which are required to suppurate.

REFRIGERANT LOTION.

Mix together equal parts of acetated water of ammonia and tincture of camphor; which apply to the inflamed joint or other part.

Another.—Dissolve an ounce of muriate of ammonia in four ounces of common vinegar, and add ten ounces of water, to be applied with or without a cloth to the inflamed surfaces.

Another.—Mix together two ounces of rectified spirits, and five ounces of acetated water of ammonia.

SEDATIVE LOTION.

Dissolve half a drachm of sugar of lead in four ounces of vinegar, and then add an ounce of common spirits with a pint of water. Linen cloths dipped in this lotion are to be applied to inflamed parts, etc.

COLD AND SEDATIVE POULTICE.

Take of goulard water, (or solution of sugar of lead,) drachm and a half; rectified spirits, two ounces; water a pint. These are to be mixed with a sufficient quantity of the crumb of a new loaf, so as to form a poultice, to be applied at night to the inflamed parts.

Another.—Mix with a crumb of bread as above, one drachm of goulard water (or solution of sugar of lead) and a pint of common water that has been boiled.

POULTICE TO HASTEN SUPPURATION.

Make two parts of finely-powdered bran, and one part of linseed meal, into a poultice, with boiling water. A little oil should be spread over the surface just before it is applied.

Another.—Take a crumb of bread and linseed meal in equal parts. Make them into a poultice with boiling milk.

LINSEED POULTICE.

Stir linseed flour into boiling water, in sufficient quantity to form a poultice of proper consistency, and before application, smear the surface with a little olive or linseed oil. If irritation, with great pain and hardness should prevail, it will be necessary to substitute a decoction of

poppy heads for the common water. This poultice is in general use in all the hospitals.

EMBROICATION FOR SPRAINS.

Shake in a phial, until they become white like milk, ten drachms of olive oil, with two drachms of spirits of hartshorn; then add four drachms of oil of turpentine. When properly mixed, they may be directly used as an embroication for sprains and bruises.

Where weakness remains in consequence of a sprain, cold water ought to be pumped on it every morning; and a long calico roller should be bound firmly (but not too tight,) round it immediately after. By these means, strength will soon be restored.

Another.—Digest fifteen ounces of white hard soap, scraped with a knife, in four pints of alcohol, and one pint of hartshorn, previously mixed in a large bottle. When dissolved, add five ounces of camphor. When this last is entirely dissolved, the embroication is fit for use.

This elegant and powerful stimulant was selected from the Pharmacopœia of the Middlesex Hospital, for private use. The above quantities of the ingredients are to be reduced in proportion to each other, according to the quantity likely to be used in a family. If one-third only is required, use five ounces of soap, one of camphor, sixteen of spirits of wine, and four of water of ammonia.

APPLICATION OF LEECHES.

In the applying of leeches to the human body, success is rendered more certain by previously drying them, or allowing them to creep over a dry cloth. To attract them, the part should be moistened with cream, sugar, or blood, and if this should be insufficient, the leech may be

cooled by touching it with a cloth dipped in cold water. The escape of leeches from the part is to be prevented by covering them with a wineglass or tumbler.

BURNS AND SCALDS.

Take of linseed or olive oil, lime water, each equal parts, or three ounces, by measure; mix, by shaking them together. This liniment is extremely useful in cases of scalds or burns, being singularly efficacious in preventing, if applied in time, the inflammation subsequent to these, or even in removing it after it has come on.

Another.—Lime-water with linseed oil has often been used as a liniment, in the proportion of an ounce and a half to the latter, to three ounces of the former. This is a very excellent application.

Another.—Many medical men are partial to the use of lime-water and common spirits immediately after the accident, in proportion of three ounces of the latter to six ounces of the former. This mixture should be applied cold, and the parts kept constantly covered with a fine linen cloth dipped in it.

Another.—Raw potatoes, scraped or grated, may be advantageously applied to recent burns and scalds, if nothing better can conveniently be had. But, perhaps, the best application, immediately after the accident, is common spirits, with a solution of sugar of lead, in the proportion of twelve ounces of the latter, to four ounces of the former.

Another.—Apply oatmeal and cold water to the part affected, immediately after the accident; keep it on as a

poultice all night ; next morning, if not serious, it will be quite well, neither blister nor wounds appearing.

In all cases of burns and scalds, it is necessary to observe, that if fever should ensue, gently laxative medicines ought to be administered. The best are castor oil and epsom salts.

If the injury arising from the scald or burn be very severe, suppuration should be promoted by fomentations and emollient poultices. The deformity or constriction of muscles and tendons, which arises from burns and scalds, is to be obviated as much as possible by bandage and position. Particular attention must be paid to positions where joints are concerned, and in burns in the neck. In all, the limbs should be as much as possible in their natural situation of rest ; but the head, in particular, should be kept in a proper position.

EXTENSIVE BURNS AND SCALDS.

In several bad cases of burns and scalds, the topical application of well-carded cotton wool has succeeded in effecting a cure in a few days. For this discovery we are indebted to chance. The child of a negro in the West Indies, in consequence of falling into boiling water, was most dreadfully scalded ; the mother, being ignorant of any mode of treatment, immediately laid the child on the cotton wool she had been carding, and covered it over with it. The cotton wool adhered closely to the injured parts, and being caked by the discharge, completely defended the surface from the action of the atmosphere. In the course of a few days the whole peeled off with the injured skin, leaving a healthy surface covered with a new cuticle. The same treatment has been adopted in Scotland, and elsewhere, in several bad cases of burns and scalds, with singular happy results. When the dis-

charge exudes through the first layer, more cotton must be added to absorb it. In order that it may adhere to the injured part, the surface should be moistened with oil.

POULTICE FOR ULCERS.

Boil any quantity of fresh carrots until they are sufficiently soft to be beaten up into a smooth pulp. This is equally beneficial to the cure of cancerous, as well as scorbutic ulcers. The latter are known by a brown color, the discharge being thin and corroding, while the fungous excrescences which shoot out, bleed on the slightest touch. The ulcer is surrounded by a livid ring, in which small spots are frequently observed. The former are known by their very irregular surface, from several parts of which blood exudes. They are attended by shooting pains, and have a fetid discharge.

Another.—Boil any quantity of the bottom leaves of the common meadow sorrel, until they are sufficiently soft; then beat them into a smooth pulp, which is to be applied as a poultice to ulcers of the above-mentioned nature.

Another.—Poultices of the pulp of apples have been successfully employed for these ulcers. They are made by mixing two ounces of the pulp of boiled apples with the same weight of the crumb of bread.

LOTION FOR SCORBUTIC ULCERS.

Mix from one to two drachms of muriate acid (spirit of salt) with a pint of water. This lotion is very useful in cleansing and stimulating the above-mentioned ulcers.

Another.—Make a lotion by dissolving half an ounce

of salt-petre in half a pint of common vinegar, with which cleanse the ulcers in question.

MALT POULTICE.

Mix as much ground malt with half a pint of yeast as will make a poultice of moderate consistence. This poultice is gently stimulating, and very serviceable in destroying the fetid and disagreeable smell which arises from foul ulcers and gangrenous wounds.

Another.—A similar poultice, and for the same purpose, is prepared by stirring into an infusion of malt, as much oatmeal as may be required to make it of a proper thickness, and afterward adding about a spoonful of yeast.

STRONG BEER POULTICE.

Stir into half a pint of ale, or strong beer-grounds, as much oatmeal or linseed meal, as will make a poultice of proper thickness. This will prove an excellent stimulant and antiseptic for foul ulcers. It should be applied as warm as the parts will bear, and should be renewed every six hours.

YEAST POULTICE.

Mix well together one pound of linseed meal, and a pint of ale yeast. Expose this to a gentle heat, until a certain degree of fermentation takes place. This poultice is excellent for stimulating and cleansing foul ulcers.

CHARCOAL POULTICE.

To half a pound of the common oatmeal poultice, add two ounces of fresh burnt charcoal, finely pounded and sifted. Mix the whole well together, and apply it to foul

ulcers and venereal sores; the fetid smell and unhealthy appearance of which it speedily destroys.

EYE-WATERS.

Take of extract of lead, ten drops; rose-water, six ounces. Mix, and wash the eyes night and morning.

Another.—Take of extract of lead, ten drops; spirits of camphor, twenty drops; rose-water, half a pint. Mix. This eye-water is extremely useful in ophthalmia attended with much inflammation.

Another.—Take of opium, ten grains; camphor, six grains; boiling water, twelve ounces; rub the opium and camphor with the boiling water, and strain. This eye-water abates the pain and irritation attendant on severe cases of inflammation of the eyes.

Another.—Take of white vitriol, half a drachm; spirits of camphor, one drachm; warm water, two ounces; rose-water, four ounces. Dissolve the vitriol in the warm water, and add the spirits of camphor and rose-water. This is a useful eye-water in the chronic state of ophthalmia, or what is generally called weakness of the eyes, after inflammation.

COMPOUND COLOCYNTH PILLS.

Take of pith of colocynth, cut small, six drachms; aloes, one ounce and a half; scammony, one ounce and a half; cardamon seeds, husked and bruised, one drachm; castile soap, softened with warm water, so as to have a gelatinous consistence, three drachms; warm water, one pint. Digest the colocynth in the water, in a covered vessel, with a moderate heat, for four days. To the liquor, expressed and filtered, add the aloes and scammony, separately, reduced to powder; then evaporate the mixture to a proper thickness for making pills, having added, to-

ward the end of the evaporation, the soap-jelly and powdered seeds, and mix all the ingredients thoroughly together.

These pills are much used as warm and stomachic laxatives; they are well suited for costiveness, so often attendant on people of sedentary lives, and, upon the whole, are one of the most useful articles in the materia medica.

ALOETIC PILLS.

Take of socotrine aloes, powdered, one ounce; extract of gentian, half an ounce; oil of caraway seeds, two scruples; syrup of ginger, as much as is sufficient. Beat them together. The dose is about ten grains.

COMPOUND ALOETIC PILLS.

Take of hepatic aloes, one ounce; ginger root, in powder, one drachm; soap, half an ounce; essence of peppermint, half a drachm. Powder the aloes with the ginger, then add the soap and the oil, so as to form an intimate mixture. This is an excellent purge for costive habits, in the dose of from five to ten grains.

CASTOR OIL CLYSTER.

Take of castor oil, two ounces; one egg; mix them well, and then add gruel, eight ounces, which will operate very mildly, and is efficacious in cases of worms.

PURGING CLYSTER.

Take of manna, one ounce; dissolve in ten ounces, by measure, of compound decoction of chamomile; then add of olive oil, one ounce; sulphate of magnesia, half an ounce. Mix, and let it be given directly.

PURGATIVE POWDER, FORMERLY CALLED PICRA.

Take of socotrine aloes, one pound ; white canella, three ounces. Powder them separately, and then mix them. The spicy canella acts as a corrigent to the aloes ; but the compound is more adapted to be formed into pills than to be used in the state of powder. It is a convenient medicine for costive habits, not subject to the piles. Dose, from ten grains to a scruple at bed-time.

NAPOLEON'S PECTORAL PILLS.

The following recipe was copied from one in the possession of the late Emperor of France, and was a very favorite remedy with Napoleon for difficulty of breathing, or oppression of the chest, arising from a collection of mucus in the air cells and vessels of the lungs, and in the gullet. Considerable benefit has been derived from them in many similar cases. Take of ipecacuanha root, in powder, thirty grains ; squill root, in powder, gum ammoniac, do. each two scruples ; mucilage of gum arabic, sufficient to form a mass. To be divided into twenty-four pills : two to be taken every night and morning.

DR. RATCLIFFE'S COUGH MIXTURE.

Mix together four drachms of syrup of squills, four drachms of elixir of paregoric, four drachms of syrup of poppies. Of this, take a tea-spoonful in a little tea or warm water, as occasion requires.

DR. MUNRO'S COUGH MEDICINE.

Take four drachms of paregoric elixir, two drachms of sulphuric ether, two drachms of tincture of tolu. Mix and take a tea-spoonful night and morning, or when the cough is troublesome, in a little milk-warm water.

SIMPLE REMEDY FOR COUGHS.

Take of boiling water, half a pint ; black currant jelly, a dessert-spoonful ; sweet spirits of nitre, a tea-spoonful. Mix the jelly in the water first, till it is quite dissolved, and add the nitre last. Take a dessert-spoonful of the mixture at night, going to bed, or when the cough is troublesome. The mixture should be made and kept in a tea-pot, or other covered vessel.

REMEDY FOR CHRONIC COUGH.

The following is very serviceable in common obstinate coughs, unattended with fever. Take of tincture of tolu, three drachms ; elixir of paregoric, half an ounce ; tincture of squills, one drachm. Two tea-spoonful to be taken in a tumbler of barley-water going to bed, and when the cough is troublesome.

FOR COUGHS IN AGED PERSONS.

In the coughs of aged persons, or in cases where there are large accumulations of purulent or viscid matter, with feeble expectoration, the following mixture will be found highly beneficial : Pour gradually two drachms of nitric acid, diluted in half a pint of water, on two drachms of gum ammoniac, and triturate them in a glass mortar, until the gum is dissolved. A table-spoonful to be taken, in sweetened water, every two or three hours.

GARGLE FOR SORE THROAT.

Take of decoction of bark, seven ounces ; tincture of myrrh, two drachms ; nitre, three drachms. Make into a gargle. This is a sovereign method to disperse a tumefied gland, or common sore throat. By taking on such occasions a small lump of purified nitre, putting it into the

mouth, and letting it dissolve there, then removing it, and applying it again in a few seconds, and swallowing the saliva, I have, says Dr. Thornton, for many years prevented a sore throat from forming.

FOR PUTRID SORE THROAT.

Take of decoction of bark, six ounces ; diluted vitriolic acid, one drachm ; honey of roses, one ounce. Make into a gargle ; to be used, mixed with port wine, frequently during the day.

FOR INFLAMMATORY SORE THROAT.

Take of nitre, two drachms ; honey, four drachms ; rose-water, six ounces. Mix. To be used frequently.

Another.—Take of spirits of salts, twenty drops ; honey of roses, half an ounce ; water, four ounces. Mix.

PILLS FOR RHEUMATISM.

Take of guaiacum (gum resin) powder, and soap, equal parts, one drachm ; oil of juniper, four drops. Make into twenty-eight pills ; take two four times a day. This is an admirable remedy.

OINTMENT FOR THE SAME.

An ointment of stramonium, made by gently boiling six ounces of the recent leaves (bruised) in a pound and a half of fresh hogs' lard, till they become crisp, is in high repute as a remedy for this disease. The size of a nutmeg, Dr. Turner, of Philadelphia, has found to remove rheumatic pains, after electricity and powerful liniments, with internal remedies, had totally failed ; and Dr. Zollickoffer says, that he has known the stramonium oint-

ment to succeed in cases of rheumatism, after the internal exhibition of the tincture of stramonium had no effect. For internal use he prefers a tincture of the leaves (made in the proportion of an ounce and a half of the dried leaves to a pint of proof spirits,) to the extract.

TONIC FOR DEBILITY IN FEMALES.

Take of soft extract of bark, two drachms ; colombo, rust of iron, each one drachm ; simple syrup, as much as is sufficient. Make into fifty pills ; take two, and gradually increase to five, three times a day.

SORE NIPPLES.

Chapped or sore nipples are very frequent with those who give suck. In this case, the olive oil is a very proper application ; or fresh cream spread upon fine linen ; or a solution of gum arabic in water.

It is almost needless to observe, that whatever applications be made use of to the nipples, they ought always to be washed off before the child is permitted to suck.

ROOT BEER.

The following beer is an excellent medicine for diseases of the blood :

Sassafras root.

Burdock root.

Wild cherry bark—of the root.

Root of black alder.

Spice wood.

Boil several hours, strain and sweeten with molasses or sugar ; add when blood-warm, sufficient yeast to ferment it. When it ferments, it is fit to drink. A little ginger and hops helps it much.

ANTI-BILIOUS MEDICINE.

Jalap, one pound.

Senna, two do.

Clored, two ounces.

A tea-spoonful is a dose, given in warm water. It is a capital medicine.

NERVOUS PILL.

Extract of valerian and chamomile, equal parts; made into three-grain pills. Take three or four a day.

COMMON POULTICE.

Pulverized slippery-elm bark, stirred into hot milk or water, till of the right thickness. *This is the best poultice that can be had.*

STRENGTHENING PLASTER.

Hemlock gum, three parts; white turpentine, one part; dissolve and strain.

CURE FOR SCROFULA.

Yellow dock root, two pounds.

Bark of bitter-sweet root, two pounds.

Boil thoroughly, and sweeten. Give a wine-glassful before each meal.

HEALING SALVE.

Sweet oil, three quarts.

Resin, three ounces.

Beeswax, three ounces.

Melt together; then add powdered red lead two pounds, heat all these together, and when nearly cold add a piece of camphor as large as a nutmeg.

Good for burns, etc. etc. etc.

USEFUL DOMESTIC MEDICINES.

DOVER'S POWDER.

Take of ipecacuanha in powder, opium (purified,) each one part ; sulphate of potass, eight parts. Triturate them together into a fine powder.

The dose is from two to five grains, repeated according as the patient's stomach and strength can bear it. It is proper to avoid much drinking immediately after taking it, otherwise it is very apt to be rejected by vomiting, before any other effects are produced. Perspiration should be kept up by diluents.

COMPOUND SOAP LINIMENT.

Take of camphor, one ounce ; soap, three ounces ; spirit of rosemary, one pint.

Digest the soap in the spirit of rosemary, until it be dissolved, and add to it the camphor. This is useful to excite action on the surface, and is used to disperse scrofulous enlargements, and to moisten flannel which is applied to the throat in cases of quinsy.

SIMPLE OINTMENT.

Take of olive oil, five ounces ; white wax, two ounces. This is a useful emollient ointment for softening the skin.

COMPOUND BURGUNDY PITCH PLASTER.

Take of Burgundy pitch, two pounds ; laudanum, one pound ; yellow resin, and yellow wax, each four ounces.

To the pitch, resin, and wax, melted together, add first the laudanum.

After a long-continued cough in the winter, a Burgundy pitch plaster should be put over the breast-bone.

ADHESIVE PLASTER.

Take of common, or litharge plaster, five parts ; white resin, one part.

Melt them together, and spread the liquid compound thin, on strips of linen, by means of a spatula, or table-knife.

This plaster is very adhesive and is used for keeping on other dressings, etc.

TINCTURE OF GINGER.

Take of ginger, in coarse powder, two ounces ; alcohol, two pints.

Digest in a gentle heat for seven days, and strain.

This tincture is cordial and stimulant, and is generally employed as a corrective to purgative draughts.

GODFREY'S CORDIAL.

Dissolve half an ounce of opium, one drachm of oil of sassafras, in two ounces of alcohol. Now mix four pounds of molasses, with one gallon of water, and when cold mix both solutions. This is generally used to soothe the pains of children, etc.

SYRUP OF POPPIES.

Take of the heads of white poppies, dried, three pounds and a half ; double-refined sugar, six pounds ; water, eight gallons.

Slice and bruise the heads, then boil them in the water to three gallons, and press out the decoction. Reduce

this by boiling, to about four pints, and strain it while hot through a sieve, then through a thin woollen cloth, and set it aside for twelve hours, that the grounds may subside. Boil the liquor poured off from the grounds to three pints, and dissolve the sugar in it, that it may be made a syrup.

This syrup, impregnated with the narcotic matter of the poppy-head, is given to children in doses of two or three drachms, and to adults of from half an ounce, to one ounce and upward, for easing pain, procuring rest, and answering the other intentions of mild operations. Particular care is requisite in its preparation, that it may be always made, as nearly as possible, of the same strength.

TAR WATER.

Take of tar, two pints; water, one gallon. Mix, by stirring them with a wooden rod for a quarter of an hour, and, after the tar has subsided, strain the liquor, and keep it in well-corked phials.

Tar-water should have the color of white wine, and an empyreumatic taste. It acts as a stimulant, raising the pulse, and increasing the discharge by the skin and kidneys. It may be drank to the extent of a pint or two in course of a day.

DECOCTION OF SARSAPARILLA.

Take of sarsaparilla root, cut, six ounces; water, eight pints.

After macerating for two hours, with a heat about 195 degrees, then take out the root and bruise it; add it again to the liquor, and macerate it for two hours longer: then boil down the liquor to four pints, and strain it. The dose is from four ounces, to half a pint, or more, daily.

DECOCTION OF THE WOODS.

Take of guaiacum raspings, three ounces; raisins, stoned, two ounces; sassafras root, sliced, liquorice root, bruised, each one ounce; water, ten pounds.

Boil the guaiacum and raisins with the water, over a gentle fire, to the consumption of one half, adding, toward the end, the sassafras and liquorice, and strain the decoction without expression.

This decoction is of use in some rheumatic and cutaneous affections. It may be taken by itself, to the quantity of a quarter of a pint, twice or thrice a day, or used as an assistant in a course of mercurial or antimonial alteratives; the patient in either case keeping warm, in order to promote the operation of the medicine.

WATER GRUEL.

Put a large spoonful of oatmeal into a pint of water, stir it well together, and let it boil three or four times, stirring it often. Then strain it through a sieve, put in some salt according to taste, and if necessary add a piece of fresh butter. Stir with a spoon, until the butter is melted, when it will be fine and smooth.

PANADA.

Put a blade of mace, a large piece of the crumb of bread, and a quart of water, in a clean saucepan. Let it boil two minutes, then take out the bread, and bruise it very fine in a basin. Mix with it as much of the warm water as it will require, pour away the rest, and sweeten it to the taste of the patient. If necessary, put in a piece of butter of the size of a walnut, but add no wine. Grate in a little nutmeg if requisite.

ISINGLASS JELLY, ETC.

Put an ounce of isinglass, and half an ounce of cloves, into a quart of water. Boil it down to a pint, strain it upon a pound of loaf-sugar, and when cold add a little wine, when it will be fit for use. A very nourishing beverage may be made by merely boiling the isinglass with milk, and sweetening with lump-sugar.

BEEF TEA.

Take off the fat and skin from a pound of lean beef, and cut it into pieces. Then put it into a gallon of water, with the under crust of a penny loaf, and a small portion of salt. Let the whole boil till reduced to two quarts, and strain, when it will be fit for use.

Another method.—In some cases, when the patient is very weak, the tea must be made thus: Take a piece of lean beef, cut it across and across, then pour on it scalding water. Cover it up close, and let it stand till cold. Then pour it off, and warm it as the patient requires, having seasoned it moderately.

TRANSPARENT SOUP FOR CONVALESCENTS.

Cut the meat from a leg of veal into small pieces, and break the bone into several bits. Put the meat into a very large jug, and the bones at the top, with a bunch of common sweet herbs, a quarter of an ounce of mace, and half a pound of almonds, finely blanched and beaten. Pour on it four quarts of boiling water, and let it stand all night, covered close by the fireside. The next day put it into a well-tinned saucepan, and let it boil slowly, till it is reduced to two quarts. Be careful, at the time it is boiling, to skim it, and take off the fat as it rises. Strain into a bowl, and when settled for two hours, pour it into

a clean saucepan, clear from the sediments, if any. Add three ounces of rice, previously boiled in a little water. When once more boiled, it will be fit for use

SEIDLITZ POWDERS.

Take of Rochelle salts, one drachm; carbonate of soda, twenty-five grains; tartaric acid, twenty grains.

Dissolve the two first in a tumbler of water, then add the latter, and swallow without loss of time.

OF ACCIDENTS.

Whenever a blow has been inflicted, whether by being thrown from a horse, out of a carriage, by falling from a height, or any other way, bleed the patient to the amount of twelve or fourteen ounces, on the spot, if practicable; if not, as soon after the accident as possible. This rule admits of but one exception, and that is, when the violence has been so great as nearly to extinguish all the powers of life, in which case, it is proper to wait for symptoms of returning animation. To hasten these, a little wine and water, or other stimulus may be given.

If, in consequence of a broken bone or other injury, the patient is unable to walk, take a door from its hinges, lay him carefully on it, and have him carried by assistance to the nearest house. If no door or sofa can be procured, two boards, sufficiently long and broad, should be nailed to two cross-pieces, the ends of which must project about a foot, so as to form handles. If in the woods, or where no boards can be procured, a litter may be formed from the branches of trees. In this way a handbarrow may be constructed in a few minutes, on which the sufferer may be properly carried.

If he has been wounded and bleeds, the bleeding must be stopped before he is removed.

Having reached a house, lay him on a bed, and undress him with care and gentleness. If any difficulty arises in getting off his coat or pantaloons, rip up the seams, rather than use force. This being done, proceed to ascertain the nature of the injury.

This may be either simple or compound; that is, it may be a contusion or bruise, a wound, fracture or dislocation, or it may be two or all of them united in one or several parts.

A contusion is the necessary consequence of every blow, and is known by the swelling and discoloration of the skin.

Wounds are self-evident.

Fractures are known by the sudden and severe pain, by the mis-shapen appearance of the limb, sometimes by its being shortened, by the patient being unable to move it without excruciating pain, but most certainly, by grasping the limb above and below the spot where the fracture is supposed to exist, and twisting it different ways, when a grating will be felt, occasioned by the broken ends of the bone rubbing against each other. If the swelling, however, is very great, this experiment should not be made until it is reduced.

Dislocations, or bones being out of joint, are known by the deformity of the joint when compared with its fellow, by the pain and inability to move the limb, by its being longer or shorter than usual, and by the impossibility of moving it in particular directions.

OF SPRAINS.

Plunge the part sprained into very cold water, and hold it there as long at a time as you can bear it—for

several hours—then rub it well with camphorated spirits. If the accident has happened to a joint, as in the ankle, and it remains weak, pour cold water on it from the spout of a tea-kettle, held at a distance, several times in the day.

OF CONTUSIONS.

If slight, bathe the part frequently with cold vinegar and water for a few hours, and then rub it well with brandy, or spirits of any kind. Should it be very great, or so as to have affected the whole body, which may be known by a general soreness, bleed and purge the patient, and confine him to a diet of rice-water, lemonade, panada, etc. If fever comes on, repeat the bleeding, purging, etc. In all cases of this nature, be sure the water is regularly evacuated, for it sometimes happens that in consequence of the nerves of the bladder being palsied by the blow, the patient feels no desire to pass it, though the bladder be full. If a suppression ensues, pass a catheter, if possible, or procure assistance for that purpose. The most serious effects, however, resulting from contusion, are when the blow is applied to the head, producing either concussion or compression of the brain.

CONCUSSION OF THE BRAIN.

SYMPTOMS—The patient is stunned; his breathing slow; drowsiness; stupidity; the pupil of the eye rather contracted; vomiting. After a time he recovers.

TREATMENT.—Apply cloths dipped in cold vinegar and water to his head, and when the stupor is gone bleed him, and open his bowels with epsom salts. He should be confined to the bed, kept on a low diet, in a quiet situation, and every measure taken to prevent an inflammation of the brain; which, if it comes on, must be treated by copious bleeding, blisters, etc.

COMPRESSION OF THE BRAIN.

SYMPTOMS—Loss of sense and motion ; slow, noisy and laborious breathing ; pulse slow and irregular ; the muscles relaxed, as in a person just dead ; the pupil of the eye enlarged, and will not contract even by a strong light ; the patient lies like one in an apoplectic fit, and cannot be roused.

TREATMENT.—Open a vein and draw off sixteen or twenty ounces of blood ; shave the head, and, if possible, procure surgical assistance without delay, as there is nothing but an operation that can be of any avail.

OF WOUNDS.

Wounds are of three kinds, viz : incised, punctured, and contused ; among the latter are included gunshot wounds. The first step in all wounds, is

TO STOP THE BLEEDING.

If the flow of blood is but trifling, draw the edges of the wound together with your hand, and hold them in that position some time, when it will frequently stop. If, on the contrary, it is large, of a bright red color, flowing in spirts or with a jerk, clap your finger on the spot it springs from, and hold it there with a firm pressure, while you direct some one to pass a handkerchief round the limb (supposing the wound to be in one,) above the cut, and to tie its two ends together in a hard knot. A cane, whip-handle, or stick of any kind, must now be passed under the knot, (between the upper surface of the limb and the handkerchief,) and turned round and round until the stick is brought down to the thigh, so as to make the handkerchief encircle it with considerable tightness. You may then take off your finger, if the blood still flows, and tight-

en the handkerchief by a turn or two of the stick, until it ceases. The patient may now be removed (taking care to secure the stick in its position,) without running any risk of bleeding to death by the way.

As this apparatus cannot be left on for any length of time, without destroying the life of the parts, endeavor as soon as possible to secure the bleeding vessels, and take it off. Having waxed together three or four threads of a sufficient length, cut the ligature they form into as many pieces as you think there are vessels to be taken up, each piece being about a foot long. Wash the parts with warm water, and then with a sharp hook or a slender pair of pincers in your hand, fix your eye steadily upon the wound, and direct the handkerchief to be relaxed by a turn or two of the stick; you will now see the mouth of the artery from which the blood springs; seize it with your hook or pincers, draw it a little out, while some one passes a ligature round it, and ties it up tight with a double knot. In this way, take up in succession every bleeding vessel you can see or get hold of.

If the wound is too high up in a limb to apply the handkerchief, do n't lose your presence of mind: the bleeding can still be commanded. If it is the thigh, press firmly in the groin; if in the arm, with the hand-end or ring of a common door key, make pressure above the collar bone, and about its middle against the first rib which lies under it. The pressure is to be continued until assistance is procured, and the vessel tied up.

If the wound is on the head, press your finger firmly on it, until a compress can be brought, which must be bound firmly over the artery by a bandage. If the wound is in the face, or so situated that pressure cannot be effectually made, or you cannot get hold of the vessel, and the blood flows fast, place a piece of ice directly over the

wound, and let it remain there till the blood coagulates, when it may be removed, and a compress and bandage be applied.

INCISED WOUNDS.

By an incised wound is meant a clean cut. Having stopped the bleeding, wash away all dirt, etc., that may be in it with a sponge and warm water, then draw the sides of the wound together, and keep them in that position by narrow strips of sticking-plaster, placed on at regular distances, or from one to two inches apart. A soft compress of old linen or lint may be laid over the whole.

Should much inflammation follow, remove the strips, bleed and purge the patient, (who should live very low, and be kept perfectly quiet,) according to the exigency of the case. If it is plain that matter must form before the wound will heal, apply a soft poultice before that event takes place, when dressings of some simple ointment may be substituted for it.

Although narrow strips of linen, spread with sticking-plaster, form the best means of keeping the sides of a wound together, when they can be applied, yet in the ear, nose, tongue, lips, and eyelids, it is necessary to use stitches, which are made in the following manner: Having armed a common needle with a double waxed thread, pass the point of it through the skin, at a little distance from the edge of the cut, and bring it out of the opposite one, at the same distance. If more than one stitch is required, cut off the needle, thread it again, and proceed as before, until a sufficient number are taken, leaving the threads loose until all the stitches are passed, when the respective ends of each thread must be tied in a hard double knot, drawn in such a way that it bears a little on the side of the cut. When the edges of the wound are partly

united by inflammation, cut the knots carefully, and withdraw the threads.

From what has been said, it must be evident that in all wounds, after arresting the flow of blood, and cleansing the parts, if necessary, the great object is to bring their sides into contact throughout their whole depth, in order that they may grow together as quick as possible, and without the intervention of matter. To obtain this very desirable result, in addition to the means already mentioned, there are two things to be attended to ; the position of the patient, and the application of the bandage. The position of the patient should be such as will relax the skin and muscles of the part wounded, thereby diminishing their tendency to separate.

A common bandage of a proper width, passed over the compresses moderately tight, not only serves to keep them in their place, but also tends, by its pressure, to forward the great object already mentioned. If, however, the wound is so extensive and painful, that the limb or body of the patient cannot be raised for the purpose of applying or removing it, the best way is to spread the two ends of one or two strips of linen or leather with sticking-plaster, which may be applied in place of the bandage, as follows : attach one end of a strip to the sound skin, at a short distance from the compress, over which it is to be drawn with moderate firmness, and secured in a similar manner to the opposite side. A second or third may, if necessary, be added in the same way.

In all wounds, if violent inflammation come on, reduce it by bleeding, purging, etc.

PUNCTURED WOUNDS.

These are caused by sharp-pointed instruments, as needles, awls, nails, etc. Having stopped the bleeding,

withdraw any foreign body, as part of a needle, splinters, bit of a glass, etc. that may be in it, provided it can be done easily : and if enlarging the wound a little will enable you to succeed in this, do so. Though it is not always necessary to enlarge wounds of this nature, yet in hot weather it is a work of precaution, which should never be omitted. As soon as this is done, pour a little turpentine into the wound, or touch it with caustic, and then cover it with a poultice, moistened with laudanum. This practice may prevent locked-jaw, which is but too frequent a consequence of wounds of this description. When matter forms, cover the part with mild dressings, as a common sore. Laudanum may be given in large doses, to relieve pain, and should the inflammation be excessive, bleed and purge. In hot weather, however, bleeding should be employed in great moderation.

CONTUSED WOUNDS.

Wounds of this nature are caused by round or blunt bodies, as musket balls, clubs, stones, etc. They are in general attended but by little bleeding ; if, however, there should be any, it must be stopped. If it arises from a ball which can be easily found and withdrawn, it is proper to do so, as well as any piece of the clothing, etc., that may be in it ; or if the ball can be distinctly felt directly under the skin, make an incision across it, and take it out, but never allow any poking in the wound to search for such things ; the best extractor of them, as well as the first and best application in contused wounds, proceed from what they may, being a soft bread-and-milk poultice.

Should the inflammation be great, bleed and purge. Pain may be relieved by laudanum, and if the parts assume a dark look, threatening mortification, cover them with a blister.

If the wound is much torn, wash the parts very nicely with warm water, and then (having secured every bleeding vessel,) lay them all down in as natural a position as you can, drawing their edges gently together, or as much so as possible, by strips of sticking-plaster, or stitches, if necessary. A soft poultice is to be applied over the whole.

POISONED WOUNDS FROM BITES OF MAD DOGS, RATTLE
SNAKES, ETC. ETC.

The instant a person is bitten, either by a mad dog or any other rabid animal or reptile, he should apply a ligature by means of the stick, above the wound, as tightly as he can well bear it, and without hesitation or delay, cut out the parts bitten, taking along with them a portion of the surrounding sound flesh. The wound should then be freely touched with caustic, or have turpentine pouted into it. A decoction of Spanish flies in turpentine, may also be applied to the skin surrounding the wound. By these means inflammation will be excited, and suppuration follow, which may prevent the usual dreadful consequences of such accidents. As soon as the parts are cut out, take off the ligature.

Should the patient be too timid to allow the use of the knife, burn the wound very freely with caustic, and place in it a tuft of tow or cotton, well moistened with the above decoction. The discharge of matter that follows should be kept up for some time. The only reasonable chance for safety, is found in the above plan, all the vegetable and mineral productions that have been hitherto recommended as internal remedies, being of very doubtful, if of any efficacy.

WOUNDS OF THE EAR, NOSE, ETC.

Wash the parts clean, and draw the edges of the wound together by as many stitches as are necessary. If the part is even completely separated, and has been trodden under feet, by washing it in warm water, and placing it accurately in the proper place, by the same means, it may still adhere.

WOUNDS OF THE SCALP.

In all wounds of the scalp it is necessary to shave off the hair. When this is done, wash the parts well, and draw the edges of the wound together with sticking-plaster. If it has been violently torn up in several pieces, wash and lay them all down on the skull again, drawing their edges as nearly together as possible by sticking-plaster, or if necessary, by stitches. Cover the whole with a soft compress, smeared with some simple ointment.

WOUNDS OF THE THROAT.

Seize and tie up every bleeding vessel you can get hold of. If the windpipe is cut only partly through, secure it with sticking-plaster. If it is completely divided, bring its edges together by stitches, taking care to pass the needle through the loose membrane that covers the windpipe, and not through the windpipe itself. The head should be bent upon the breast, and secured by bolsters and bandages in that position, to favor the approximation of the edges of the wound.

WOUNDS OF THE CHEST.

If it is a simple incised wound, draw the edges of it together by sticking-plaster, cover it with a compress of

linen, and pass a bandage round the chest. The patient is to be confined to his bed, kept on very low diet, and to be bled and purged, in order to prevent inflammation. If the latter comes on, reduce it by copious and frequent bleedings.

Should it be occasioned by a bullet, extract it, and any pieces of cloth, etc., that may be lodged in it, if possible, and cover the wound with a piece of linen smeared with some simple ointment, taking care that it is not drawn into the chest. If a portion of the lung protrudes, return it without any delay, but as gently as possible.

WOUNDS OF THE BELLY.

Close the wound by strips of sticking-plaster, and stitches passed through the skin, about half an inch from its edges, and cover the whole with a soft compress, secured by a bandage. Any inflammation that may arise is to be reduced by bleeding, purging, and a blister over the whole belly.

Should any part of the bowels come out at the wound, if clean and uninjured, return it as quickly as possible; if covered with dirt, clots of blood, etc., wash it carefully in warm water previous to so doing. If the gut is wounded, and only cut partly through, draw the two edges of it together by a stitch, and return it; if completely divided, connect the edges by four stitches at equal distances, and replace it in the belly, always leaving the end of the ligature project from the external wound, which must be closed by sticking-plaster. In five or six days, if the threads are loose, withdraw them gently and carefully

OF FRACTURES.

The signs by which fractures may be known, having been already pointed out with sufficient minuteness, it

will be unnecessary to dwell thereon; it will be well, however, to recollect this general rule: In cases, where, from the accompanying circumstances and symptoms, a strong suspicion exists that the bone is fractured, it is proper to act as though it were positively ascertained to be so.

FRACTURES OF THE COLLAR BONE.

This accident is of common occurrence, and is known at once by passing the finger along it, and by the swelling, etc. To reduce it, seat the patient in a chair without any shirt, and place a pretty stout compress of linen, made in the shape of a wedge, under his arm, the thick end of which should press against the arm-pit. His arm, bent to a right angle at the elbow, is now to be brought down to his side, and secured in that position by a long bandage, which passes over the arm of the affected side, and round the body. The fore-arm is to be supported across the breast by a sling. It takes from four to five weeks to reunite.

FRACTURES OF THE ARM.

Seat the patient on a chair, or the side of a bed, let one assistant hold the sound arm, while another grasps the wrist of the broken one and steadily extends it in an opposite direction, bending the fore-arm a little, to serve as a lever. You can now place the bones in their proper situation. Two splints of shingle or stout paste-board, long enough to reach from below the shoulder to near the elbow, must then be well covered with tow or cotton, and laid each side of the arm, and kept in that position by a bandage. The fore-arm is to be supported in a sling. Two smaller splints may for better security be laid be-

tween the first ones, that is one on top, and the other underneath the arm, to be secured by the bandage in the same way as the others.

FRACTURES OF THE RIBS.

When, after a fall or blow, the patient complains of a pricking in his side, we may suspect a rib is broken. It is ascertained by placing the tips of two or three fingers on the spot where the pain is, and desiring the patient to cough, when the grating sensation will be felt. All that is necessary, is to pass a broad bandage round the chest, so tight as to prevent the motion of the ribs in breathing, and to observe a low diet.

FOREIGN BODIES IN THE THROAT.

Persons are frequently in danger of suffocation from fish bones, pins, etc., which stick in the throat. The moment an accident of this kind occurs, desire the patient to be perfectly still, open his mouth, and look into it. If you can see the obstruction, endeavor to seize it, with your finger and thumb, or a long slender pair of pincers. If it cannot be got up, or is not of a nature to do any injury in the stomach, push it down with the handle of a spoon, or a flexible round piece of whalebone, the end of which is neatly covered with a roll of linen, or anything that may be at hand. If you can neither get it up nor down, place six grains of tartar emetic in the patient's mouth. As it dissolves, it will make him excessively sick, and in consequence of the relaxation, the bone, or whatever it may be, will descend into the stomach or be ejected from the mouth.

If a pin, button, or other metallic or pointed body has been swallowed, (or pushed into the stomach,) make the patient eat plentifully of thick rice pudding, and en-

deavor to prevent him from going to stool for at least twelve hours.

OF BURNS AND SCALDS.

There are three kind of remedies employed in accidents of this nature. Cooling applications, such as pounded ice, snow, vinegar, cold water, lead water, etc. Stimulants, as warm spirits of turpentine, brandy, or any ardent spirits, and carded or raw cotton:

Any of these articles that happens to be nearest at hand, may be tried, although the preference is due to the turpentine or spirits, which being made hot as the patient can bear it, is to be applied to all the burned surface, (so as not to touch the adjoining sound skin,) until some common basilicon ointment can be thinned with spirits of turpentine to the consistence of cream, in which state it is spread on a linen rag and laid over the part, taking care, as before, not to let it touch the sound skin.

If, however, (the rule is general,) this plan causes great pain and inflammation, it must be abandoned, and one of the others be resorted to, as the pounded ice, which can be readily applied in a bladder. Equal parts of lime-water and linseed oil, well mixed, forms one of the most soothing of all applications. Should much fever prevail, it is to be reduced by bleeding, purging, etc.; but if, on the contrary the system seems to sink, wine, bark, etc., must be employed.

DIRECTIONS FOR BLEEDING.

Tie up the arm, placing the bandage at least two inches above the projection of the elbow joint, and then feel for the pulse at the wrist. If it is stopped, the bandage is too tight, and must be relaxed. Select the most prominent vein and feel with the tip of your finger if any artery lies

near it. If you feel one pulsating so close to the vein that you are fearful of wounding it, choose another. Having set your lancet, (I allude, of course, to the spring lancet, the only one that can be used with safety,) bend the arm in the precise position it is to be kept in while the blood flows. The cutting edge of the lancet is now to be placed on the vein, while you depress the handle or frame just as much as you wish the cut to be deep ; by touching the spring on the side with your thumb, the business is done.

To stop the bleeding, relax the bandage, press the two edges of the wound together, place a little compress of linen on it, and bind up the whole with a bandage passing round the joint in a figure eight.

THE

FRUIT GARDEN,

AND

CULTIVATION OF

FOREST AND FRUIT TREES.

THE GARDEN

BY

JOHN RUSKIN

CHAPTER VIII.

THE FRUIT GARDEN.

ONE hundred trees in most cases, would furnish an ample supply for a family, and may be selected in the following proportions :*

15 cherry trees,.....	at 37½ to 50 cents.
8 apricot do.....	37½
25 pear do.....	37½
15 plum do.....	37½ to 20
20 peach do.....	25
5 nectarine do.....	25
8 quince do.....	25
4 early apple do	25

The common nursery prices are added ; and the annual interest on this sum, whether *borrowed or appropriated*, would barely replenish a tobacco box through the year.

Now, a fruit garden containing this number of trees, ought to yield a constant supply of *cherries* for two months ; of *apricots* for one month ; of *pears* for two months ; of *plums* for three months ; and of *peaches* for two months.

One hundred trees would do well on *half an acre* ; but if we allow a square rod for each tree, the fruit garden would only be ten rods square. Now, a lot of this size may be conveniently appropriated on every farm ; and where is the owner who cannot build forty rods of fence ? Let him listen, however thorny shrubs would afford the best protection—not against quadrupeds, but Plato's "two-legged featherless animals ;" and the sooner such a hedge is planted the better.

* In some regions some of these fruits will not thrive.

Unfortunately for the moral character of our population, fruit is too generally considered lawful plunder. The culturist is allowed to have a full and exclusive right to his corn and potatoes—it would be infamy to steal them; but no exclusive right to his fruit—if they can get it. Thousands of honorable exceptions to this charge may be found, but it is not the less true that a part of our population is tainted, and deserves to be branded with reproach.

The native fruit of a thinly populated country, growing without culture, and free for all—has doubtless had its share in producing this laxity of morals. “I would sooner have a hundred Irishmen round me than one Yankee,” was the declaration of a sufferer, whose fruit had been plundered near the line of the Erie canal, when that great work was in progress. But Europeans are generally more exemplary on this point than Americans—shame on us! When Professor Stowe was in Prussia, where the roads are lined with fruit trees by order of the government, he observed a wisp of straw, attached to particular trees, to protect the fruit: a sufficient guard; but he suggested to the coachman that in America, it might only prove an invitation to plunder. “Have you no schools?” was the significant reply.

One thing is worth bearing in mind by those who purchase fruit trees: the *best kinds* are generally as *hardy as the worst*, and the difference in price fades into nothing when compared with the difference in *quality*. Nobody is satisfied with mean fruit after tasting better.

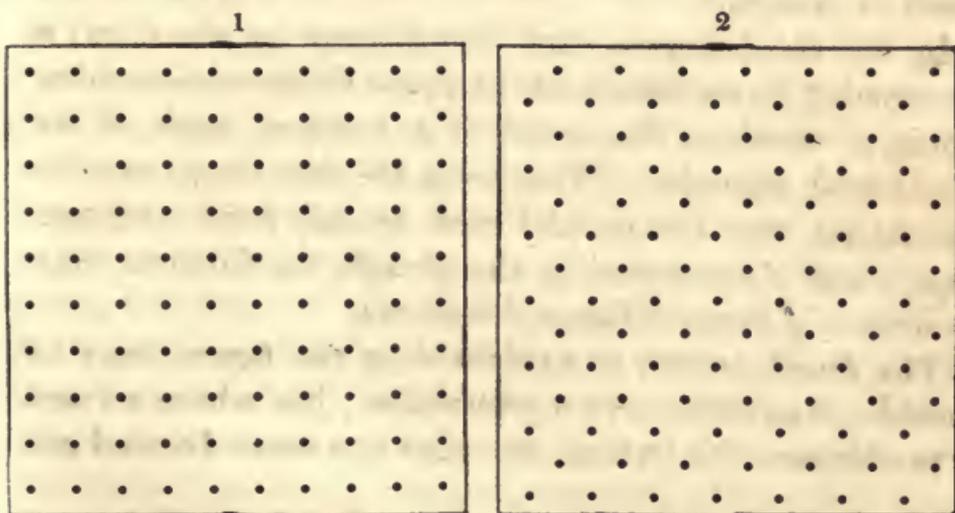
For a fruit garden, a western aspect is generally best, because it is the least subject to sudden transitions of temperature. Severe vernal frosts often prove injurious, or otherwise, according to the weather that follows. If the sky be overcast in the morning, and the air continues cold, little or no damage occurs; but when the sun breaks out warm, the injury is the greatest; and the most so, where

the trees are most exposed to his rays. For this reason, a hill or a wood on the east side, may prove very beneficial.

A northern aspect would go far toward insuring regular crops of the peach, nectarine, apricot, if protected from the sun and warm winds by a belt of evergreens. On sandy soils especially, the reflected heat is often sufficient in autumn or winter, to *start* the buds; and snow and ice have been successfully* heaped round the trees to prevent this disaster; but a northern aspect would probably render such labor unnecessary.

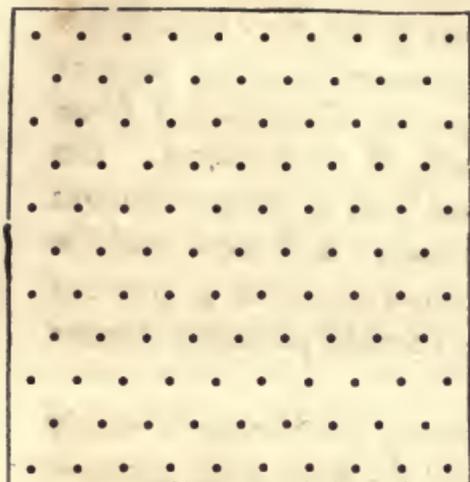
Dry firm ground should be chosen, preferring a sandy or gravelly loam, though clay will do with good culture. Wet, peaty, or spongy soils are apt to be frosty; for the radiation of heat is much greater than from firmer land.

FOUR ORDERS of arranging or planting trees have been employed, which the annexed figures exhibit, all drawn by the same scale; and the distance between the nearest points (or trees) is intended for one rod. One hundred of these are represented in two of the figures; but in the *quincunx*, owing to the vacancies in the sides, only ninety-eight are given, while in fig. 3 there is a surplus, although some vacancies also occur at the sides.

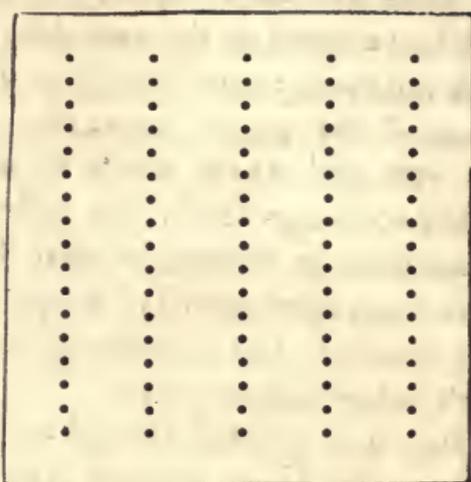


* We caused an apple tree to bloom a fortnight later than the rest of the orchard, by piling wood round it.

3



4



The *first* ORDER requires less calculation, and is more generally in use than any other; but in laying out the ground, the boundaries should be first accurately determined; and the lines may then be drawn across it with precision. No less care and attention in this respect however, would be required by the other ORDERS.

The *quincunx* fig. 2, is only a series of squares laid off diagonally; and we cannot perceive any advantage that it has over the common square, though it was formerly much in fashion.*

In the *third* ORDER, each tree (except at the sides) is surrounded by six others, all at equal distances—in other words, it stands in the centre of a *hexagon*, made of six equilateral triangles. The trees are thus more equally distributed over the ground than by any other arrangement; and if cultivated by the plough, the furrows may be drawn in three different directions.

The *fourth* ORDER, as explained by the figure, may be considered as rather a new proposition; but where a tenant is to cultivate the garden, the plan has some decided ad-

* Pope said of Lord Peterborough,

“Even he whose lightnings pierced the Iberian lines,
Now forms my *quincunx*, and now ranks my vines.”

vantages. The spaces between the rows, are wide enough for the deepest ploughing, though it should be more shallow near the trees, and in no case come close enough to touch them. A lighter plough with one horse walking in the last furrow, however, may continue the work, and save much manual labor. And where nutriment is so near, the roots will soon find it.

To lay out the garden according to this plan, draw the line for the first row, one rod from the fence; then leave a space two rods wide, and draw another line; and so on till the fifth row be completed, which will be one rod from the fence on the opposite side. The distance will allow room enough to plough between the trees and the fence, and for them not to hang over and tempt prowlers to reach the fruit on tip-toe.

Now 10 rods are 165 feet, and 32 subtracted leave 133 feet, the distance between the first and last trees in the row. For 20 trees, 19 intervening spaces are wanted; and 19 into 133 give seven feet for each space. The trees though crowded *lengthwise*, will find ample room to spread *laterally*; and our experience is decidedly in favor of this method.

It has been found very useful to keep swine and poultry in the fruit garden, on account of their services in destroying insects, and especially the curculio. In many instances no other protection has been necessary; but where the garden is large, the *plum*, *apricot*, and *nectarine* should be planted in the same *quarter*, so that the hogs, (if wanted, may be confined among them for a time. *Cherries*, and even *peaches*, would also receive benefit from their presence, though these fruits generally suffer less from this insect than the former sorts. Cherry trees however, should stand near together, so that from a central seat, a load of shot may protect them. We do not mean that all birds fond of cherries should be destroyed, but

only such as take more than a reasonable share, or that render no services in return.

Many people have a prejudice in favor of birds, that no well balanced mind should entertain. "Denizens of the air," have no more right to our property than denizens of the earth. Plunderers on two legs are not more respectable than plunderers on four legs; and cedar birds are entitled to no more regard than rats, unless personal beauty can atone for moral deformity.

Ornithologists often become partial to the subjects of their study, and side with them against the farmer and the gardener—magnifying their services and overlooking their trespasses. The laborer indeed may drive the geese from his cabbages, throw stones at the crows, and even shoot a hawk—but not the birds that devour his cherries!

An amiable writer, in reference to such visitors, says, "Such has been the security they have felt in our grounds, and so great their increase, that not only *cherries, gooseberries, and currants*, but *apples, pears, and plums*, have been ravaged; and it may become a matter for serious consideration, whether in continuing our protection, we do not risk the TOTAL LOSS of some of the most desirable appendages to the dessert." Now if called into council, our advice would be prompt and brief: Treat them according to their doings. Make pies of the robins, orioles, and cedar birds—one chicken is worth a dozen of them for ousiness; but save and protect the blue birds, warblers, and sparrows—these are always our friends.

Stunted trees always produce smaller fruit than when the same kind grows on vigorous branches; but the fruit suffers in *flavor* as well as in *size*. The trees should therefore be planted in deep beds of fertile soil. In dry seasons more especially this provision is of great importance; and young trees treated in this manner are not only

more likely to live, but grow much faster, bear much sooner, and bear much better fruit than on sterile land. All our observations go to justify these remarks.

When young trees are taken from the nursery, inquiry is often made how soon will they come into bearing? It is a very proper question, and it would be a proper answer to say: Very much according to the treatment they shall get. When they are set in holes cut out of a sod, just large enough to receive the root with some crowding, and are then left to take care of themselves, we have no right to expect them to come soon into bearing, nor to bear much when they do. Neither half starved cows, nor half starved trees will be found profitable. In the latter case especially, the interest on the purchase money is generally lost for some years, and not unfrequently the purchase too; but we hardly ever lose a tree in good condition, set in mellow ground which is kept mellow.

The holes for the trees should be not less than four feet diameter and fifteen inches deep, but a greater breadth and depth is desirable. Place the soil round the brink of the hole, ready for filling in again; but scatter the harder subsoil back out of the way. The hole should then be filled with the best earth, and rise a few inches above the general surface on account of its settling, first mixing three or four shovelfuls of chip-dirt with the part that is to come in immediate contact with the roots. It helps to keep the ground loose and moist, besides yielding much nutriment to the trees.

The roots of the trees when taken from the nursery should be carefully guarded against *drying* or *freezing*. If such care however, has not been taken, bury the *frozen* roots in the *ground* before they can thaw, and plunge the *dried* roots with several feet of the main stem into *water*, to soak there from 12 to 24 hours, till the moisture is sufficiently restored.

In planting, spread out the roots carefully, and let the best point against the strongest winds. Fine or mellow earth should fill up all the spaces between the roots, so that every fibre shall come in contact with it on every side; and in order to accomplish this intention more perfectly, throw in a pailful of water when the roots are covered, to wash the earth down, and to fill up every interstice.*

Newly planted trees being acted on as levers by the wind, often press the earth round their stems aside, and make an opening down to their roots, which in consequence suffer from both drought and disturbance. To prevent this disaster, it is therefore important that stakes should be provided to support and stiffen them. If driven before the trees are planted, they may be erect; if driven afterward they may be slanting; and in both cases, straw bands should be first wrapped once round to prevent the trees from chafing.

When trees are set in clay which holds water like a tub, they *soak* and often perish; especially if transplanted in autumn. This evil may be readily prevented however, when the plough can be introduced, by drawing several very deep furrows where the trees are to stand, clearing out the loose earth with the shovel, and then employing chips, brush, potatoe tops, straw, cornstalks, or old rails, in constructing an under drain. Even if made with these materials, it would last for an age, for when mouldered into earth, the water would soak away along the seam.

Early in summer, after the trees are planted, let the ground be well dug round with the spade, commencing shallow near the trees, but deepening as soon as there is no danger of disturbing the roots. One spading is worth several hoeings, though the broad hoe may be profitably

* An experienced horticulturist says, "Nine-tenths of the deaths from transplanting arise from the hollows left among the roots of trees by a careless and rapid mode of shovelling the earth in about the roots."

employed once a month after the spade has thoroughly loosened the soil. Trees managed in this way, will grow much faster than if the ground were just scratched over to the depth of an inch or so; and many of ours have grown as luxuriantly through the late excessive drought, as if they were in want of nothing.

The pruning of young trees to prevent their *splitting down*, is a very important operation. Many are greatly injured and sometimes ruined, for want of this precaution. Where the limbs diverge considerably, nature has provided a kind of net-work of the firmest wood to connect them together; but where two leading branches take nearly the same direction, they soon begin to press against each other; and the bark interposing, the wood is prevented from uniting. The consequence generally is, that when loaded with fruit, they are broken down by the wind. Now it is far better to cut off the limb in time. No material loss is sustained, as all the nutriment flows into the other branches, and increases their vigor.

The advantage of pruning apple trees, is generally known; and unless many of the limbs are cut out, some of the finest varieties become comparatively diminutive and insipid. The same care however, is rarely extended to other fruit trees. When the twigs become stunted and mossy, sometimes they are trimmed by the tempest, or broken down by an untimely fall of snow; and then the benefits of pruning are manifest, even when done in that rough style. It is better however, to depend on art than accident. As a general rule, the best flavored fruit of the kind grows on the most vigorous branches well exposed to the sun and air; and with this idea constantly before us, we shall hardly do amiss when we apply the axe, the saw, or the chisel; though we may specify that cross branches should be lopped, and thrifty shoots that have room to spread, should be saved.

The tree mosses are parasitic plants, and should be expelled from the fruit garden. Lye is often used for this purpose on the apple tree; but we think it is no better than lime whitewash, which purifies the bark, and leaves it in a fine healthy condition. Once a year is quite sufficient.

Under deep snows, or snow-drifts that settle around the trees, the *meadow mouse* often gnaws the bark to their great injury or destruction. This animal however always *works under cover*; and therefore the damage may be generally prevented by piling mellow earth round the stems, a foot high, late in autumn. The snow as it falls, is generally swept away from the pile by the wind; and even if the mouse should persist in climbing up on the earth—which we have not known him to do—he would soon come out into the open air, except when the snow was very deep.

Another method which has never failed with us, though requiring attention—is to *tread the snow firmly down round the stems*; and this should be carefully done every time that a deep snow falls, or whenever a drift is forming round the trees. The mouse, as he roots along, always turns away from the hardened snow.

Trees completely *girdled* by the mice however, may be saved by setting grafts *early* in the spring to restore the communication between the two detached portions of the tree—in other words, by grafting them together. Part of a small branch should be *inlaid*, both above and below; and if skilfully done and carefully coated over with grafting mud or wax, it will be very likely to grow, except on the peach or nectarine. We have succeeded in this way on a pear tree; but three or four should be set round the tree.

Cultivated *cherries* belong to several species, which have spread into many varieties, and probably *hybrids*.

The caterpillar sometimes feeds on the leaves ; and the curculio punctures some of the fruit which in consequence becomes *wormy* ; but no fruit tree yields a more certain crop, bearing every year without intermission unless the blossoms or young fruit be damaged by frost. Some kinds however, as the *morello*, have been nearly destroyed in some parts of the country by the "*black gum*." This excrescence is caused by an insect which should be carefully sought for, late in the spring or early in the summer ; and as soon as the bunches appear, the limb should be cut off and burnt.

The *slug*, another insect, feeds on the pulpy part of the leaf, despoiling its verdure and wasting the vigor of the tree. It might almost be mistaken for the filth of some little bird. It soon renders itself conspicuous however, by its works ; and though it sometimes attacks the foliage of other trees, the cherry leaf appears to be its favorite food. It may be destroyed by throwing fresh ashes among the branches by means of a shingle—every worm that is covered, perishes. It has been done when the dew was on the leaves ; but if the slug is moist enough of itself to catch the ashes, it would be better to apply them when the leaves are dry, because the latter would neither be injured by the potash, nor defiled by the dust.

The cherry tree is more impatient of *nuisances* than most other kinds. Some have been destroyed by ashes thrown round the stem. Under two trees, the pigs were fed with corn, and the cobs scattered over the ground : both perished. In a slight depression near another, the water collected in rainy weather, and the geese dabbled in it : the tree died the same summer. Lime whitewash has also been charged with injuring the cherry tree ; and if it be used at all, the experiment should be cautiously conducted.

The *morello* and *Kentish* appear to be adapted to a

greater variety of soils than the *heart* cherry trees ; and may be employed as stocks for the latter in unfavorable situations. The outgrowing of the stock by the graft, constitutes no valid objection. We have never seen a tree endangered by such overgrowth, while the obstruction to the descent of the juices, favors the enlargement of the fruit.

The *apricot* was formerly ranked with the plum, but it differs enough to stand separate. Like the plum however, it has a smooth stone, and turns sour with heat ; though in flavor it resembles the peach more than any of our fruits. It resembles it also in the excitability of the fruit buds in winter. Its earlier bloom exposes it rather more to severe weather in the spring, but generally it succeeds wherever the peach can be successfully cultivated. In this climate, the tree is perfectly hardy.

There are two species of the apricot ; the black, and the common sort, which has spread into many varieties. Ripening earlier than the peach, their presence in the fruit garden is very desirable.

Neither the borer nor the caterpillar attack the *pear* tree ; but sometimes flies, wasps, and hornets are busy among the leaves, showing that all is not right, and that honey-dew emitted by plant lice, attracts them. But this tree is subject to a more serious injury, viz : the *fire blight*, which occurs early in summer, the leaves from the extremity of the branches for two or more feet, appearing as if they were *scorched*. We think, however, that two distinct causes occasionally operate to produce similar effects, viz : insects, and a starting of the bark in winter.

The late Professor Peck, on examining the branch of a pear tree, which had died with fire blight, said the damage was caused by an insect, (*Scolytus pyri*,) and that to cut off the limbs a foot or more below the dead part, and IMMEDIATELY BURN THEM, would be the proper remedy.

We have faithfully followed this advice ; and though the fire blight has been several times in the fruit garden, its ravages have always been arrested at once, so that we have not lost a tree from this cause in twenty years. We have believed that the new colonies went with us when we carried off and destroyed the branches.

The starting of the bark in winter, appears to be caused by an untimely flowing of the sap, followed by intense cold, which expands into ice, and separates the bark from the wood. We have observed such effects once or twice, succeeded on some of the smaller branches, by a blighting of the leaves, but we believe it seldom occurs in this district.

The *plum* tree is sometimes, though rarely, attacked by the *peach worm* in Western New-York. Its most formidable enemy however, is the insect that causes the "*black gum*," similar in its effects to the insect that destroys the morello, if they are not identical. Be this as it may, it is rapidly increasing ; and unless our farmers shall turn over a new leaf, the plum will soon become very rare among us. In every direction that we travel, branches are covered with these excrescences ; and if there is one man within fifty miles of us who has done his duty, we should be pleased to hear it.

To guard against this insect, the trees should be well pruned, though not enough to check their vigor, so that the *bunches* may be readily discovered. Unless this precaution be taken, it would be very difficult to find all of them, without spending more time than people in general have to spare. Let there be no delay in cutting off and burning them when they are found.

It appears that the eggs of this insect are deposited in a slit of the bark some time during the summer, and where they generally pass the winter without hatching. Soon after vegetation commences in the spring, a kind of fun-

gous wood is formed, swelling out on one side of the branch, and among this the young progeny find nourishment and shelter. This fungous wood however, appears not to be occasioned by the worm, for it often occurs where there are none, but by some irritating secretion from the parent.

After the late severe drought, when the trees took a second growth, we found several *new* excrescences so late in the season, that probably the worms would have perished with cold if we had not arrested their career. Does the starting of the fungous wood cause the eggs to hatch?

We have spoken of insects that depredate on the *trees* : we now turn to such as injure the *fruit* by puncturing and then depositing a nit, so that it becomes *wormy*, and drops prematurely from the tree.

Every person that cultivates the plum, apricot, or nectarine, ought to be acquainted with the *curculio*, both by sight and character. There ought to be a good drawing of this insect, but we have seen none; and at this season of the year, we cannot have one prepared. It is however, a dark-brown bug, about a quarter of an inch long, and of singular form, having a slender neck and head. When it drops from the tree, it lies still, pretending to be dead; or if a dried blossom or leaf be near, where it can hide, it moves cautiously under, fearing to be seen in motion. When crushed between the thumb and finger, it feels like Indian meal, and like no other insect that we have examined.

It is timid; and when hogs, sheep, or cattle pass frequently under the trees, it is scarcer than in more retired places. Trees that stand near a door where there is much passing, are often entirely exempt from its visits; and the same result occurs where they stand in a lane or barnyard. The late Thomas Forrest of Germantown, near Philadelphia, tied one end of a cord to a plum tree, and

the other end to his pump-handle, so that it shook the tree whenever they drew water. It saved the fruit.

This insect on one point is very sagacious. It is unwilling to have its progeny drop on the pavement, or into water. The same shrewd horticulturist set his nectarine trees leaning over the fish-pond, and not a curculio disturbed them. In regard to pavements, we have had several accounts of their efficacy. A friend of ours had his plums to ripen perfectly over a pavement, while others, without this protection, though otherwise favorably situated, were entirely destroyed.

Only a few trees, however, can be guarded in this way. For the fruit garden, we want something more comprehensive, and have already referred to the services of swine and poultry. They devour much of the *wormy* fruit, and the young curculios along with it; but some of the insects probably escape, besides all such as leave the fruit before it falls.* How long they live, is not known; but if we may judge from their difference of size, it may be many years; and to this company, the new brood is annually added. Unless the swine and poultry, therefore, can induce them to migrate, the fruit must suffer greatly from their ravages, and such has been our experience.

Finding many of our trees nearly unproductive, we determined in the early part of last summer, to call these depredators to account. Accordingly, we followed the same plan that we recommended some years ago in the "New-York Farmer:"—spread sheets under the trees, and jarred the branches violently. The little marauders taken by surprise, fell down by dozens; and the contrast of colors, enabled us to detect them at a glance. We chose the cool of the morning for this purpose, when they

* Last summer, we observed several cases of this kind, where the larva had escaped through small holes in the sides of plums and apricots.

were slightly benumbed ; and persevered till we had destroyed nearly seventeen hundred. In consequence, all the trees that we visited, bore fruit in abundance ; and to prove that our labor was rewarded, a tree that was overlooked bore three apricots, while another of less size bore half a bushel.

During its migrations, the curculio doubtless uses its wings ; and near its native spot it may occasionally fly into the tree ; but from several circumstances, we conclude that it generally ascends by crawling. With this belief, circular tin troughs have been fastened round the trees ; and being filled, and kept filled, with water, have been found useful—for this insect is no navigator. These appendages, however, should be applied very early in the spring, before it gets up the trees. Afterward they are not likely to be of any benefit whatever.

When the earlier accounts of the curculio were published, it was believed to be identical with the worms that infest the apple, pear, and quince ; but Noyes Darling of New-Haven, more than ten years ago, discovered that they were very distinct ; and we repeated his experiment with the same result. It is a dark-gray miller that attacks the apple and the pear, and probably the quince. It was also thought that the curculio continued its ravages until autumn ; but the same sagacious horticulturist found that its work was finished before midsummer.

The mark which it leaves on the fruit that it punctures, is in form of a crescent ; and we have never seen that mark except on stone fruit.

The *down* of the *peach* generally protects it against the curculio, but the *nectarine*, which is only a smooth skin variety of peculiar flavor, often suffers even more than the plum or the apricot.

The *peach worm* (*Ægeria exitiosa*) attacks the tree at the root, where the bark is soft from the moisture of the

ground, or the shading of grass; but it avoids the hard, scaly part, so that old trees are often undisturbed for years. On the reverse, young trees are much injured by it, and sometimes destroyed, especially where two or more are at work at the same time. If they encircle the tree, there is no hope of its recovery, but this is rarely accomplished by one worm.

Though it feeds on the pulpy part of the bark, it seems careful not to disturb the cuticle, so that were it not for the gum and filth mixed together on the outside, it would be difficult to find the depredator. The fresh filth however, sufficiently indicates its presence. By entering a knife at that point, and slitting the cuticle longitudinally, the establishment is soon broken up, for it is seldom four inches in length; and then we discover a white grub three quarters of an inch long, which is readily extracted. When it is removed, the tree speedily recovers.

Some persons remove the soil to the depth of two or three inches, and apply hot water, hot soap suds, or warm brine, at any time in autumn or spring when the ground is unfrozen; and if the gum be also removed, so that the fluid can enter the hole, the worm is sure to perish.

Various methods have been employed to *prevent* the attacks of this insect. In the spring, earth has been piled round the tree a foot high, covering up all the bark that was tender. With the same object in view, canvas, or ropes made of hay or straw, have been wound about the stem and then coated with whitewash. Straw in an upright position has also been applied. Tan in small boxes has answered the same purpose; and its properties are also repulsive. Lime and ashes have the same effect. Common salt, either alone or mixed with nitre, has been found efficacious, besides promoting the growth and productiveness of the tree. Half a pound has been scattered round it at a time. Soot employed in the same way, is

highly recommended. A small red cedar, planted in the same hole with a peach tree has protected it by its offensive odor. Charcoal in small pieces, heaped up, is supposed to smother the worm by choke damp, and sulphur to poison it with its fumes. Doubtless all are useful, but the appendages should be removed when the warm season is over.

Sometimes a worse evil than the worm, however, overtakes the peach tree. This malady was named by the late Judge Peters of Pa. "*the yellows*;" but the leaves are not always yellow as the name would imply. A more certain indication is the premature ripening of the fruit, with purple discolorations of the pulp, and deficient flavor. As the disease advances bundles of slender twigs protrude from the larger branches, and increase till the vital energy is exhausted.

This case is perhaps the only instance of a contagious disease among vegetables, communicated by contact of the roots, or the application of pollen. That such are the facts, indeed, has not been directly proved, but the circumstantial evidence is strong and pointed. Young, healthy trees, speedily decline when planted among diseased roots. Frequently, the first appearance of the premature ripening is confined to a solitary branch, when no trace of the disease can be found in any other part of the tree. When this happens, it is prudent to amputate immediately, although it is doubtful if the tree itself can be safely left to stand till it blooms again. In particular cases we have pruned closely, destroying the blossom buds and giving it a chance for recovery, without endangering other trees; but we would not recommend it as a general rule, but extirpate the tree in due time.

It is certainly known, however, that the disease can be communicated like the small-pox. We have set buds of sickly trees into healthy stocks, and all have perished in

the course of the year. Yet different degrees of virulence, perhaps depending on the stage of the disease, are observable.

There can be no doubt that on a sickly tree, the pit or kernel is as much affected as the pulp that surrounds it; and therefore such stones ought never to be planted in a nursery. A peach tree not attacked by worms, and free from this malady, ought to live at least fifty or a hundred years; and we believe no reason whatever, except the two just mentioned, can be assigned for their early decay. If the worm is not at the root therefore, when the tree is sickly, we may conclude it has the yellows; and that this disease, if the pit was tainted, has

“Grown with its growth, and strengthened with its strength.”

Some varieties of the peach and nectarine, are subject to a *white mildew*, which appears on the new shoots about midsummer, checking their growth, but not attended with any other ill effects. It seems analogous to the mildew on the grape and gooseberry; and may be cured (it is said) by the application of sulphur water. A better course, however, for culturists in general, would be to stimulate the tree, to make a handsome growth in the early part of the season, and to take no further care.

This disease appears to be exclusively confined to Lindley's FIRST CLASS of peaches and nectarines, “whose leaves are deeply and doubly serrated, having no glands.” Some varieties of this class, however, suffer very little; while others, such as the early Anne, are much impeded in their growth.

The peach is justly considered the most delicious fruit of the temperate zone; and yet it is scarcely known in a large proportion of the State of New-York, which we have much reason to believe would admit of its successful culture. Not only in the high lands between the Cayuga

lake and the Susquehanna, but also in the elevated region between the Great Bend and the Blue Mountain in Pennsylvania, this tree has been found healthy and fruitful. We saw several in fine order, the very next season after some had perished with the cold in the low and beautiful valley of Stroudsburgh.

To some persons this statement may appear like a paradox. But what are the other facts in this case? Warmth in winter is pernicious. It starts the sap, swells the bud, and the intense cold that follows destroys bud and branch. On the contrary, the steady cold of the hills is conservative. The bud is so exquisitely folded and prepared for a severe season, that unless it is disturbed by the sap, it is safe from the greatest cold of our latitude. Like the seeds of the melon, or a grain of corn, it appears to be too dry to freeze.

In the middle districts of our State, let horticulturists therefore remember, that the hills are more favorable to the peach than the valleys; and if their labors are unrewarded in the low precincts of their villages, let them occupy the neighboring heights, and lay out fruit gardens there. Let them also remember that many trees and shrubs, which are hardy in a dry rocky soil, perish with the cold in a rich border. In the latter case, the wood is not sufficiently matured, and the frost strikes it when it is full of sap, like a weed. To crop the ends of the peach shoots, when they grow too late, has been useful—not so soon in the season as to start the buds, but as soon as that danger is over. We have alluded to the loss of the fruit buds in winter, and the early bloom of this tree. These two causes render the peach a more uncertain crop than the plum or the cherry; but particular circumstances, perhaps not well understood, have had an influence on its productiveness. When trees stand in the same immediate neighborhood, some are barren while others bear;

and a belief is becoming prevalent that grassy ground is most favorable. Though we are not entirely prepared to decide on this point, yet most of our observations lean in that direction; and if it be proved, an exception to our plan of managing the fruit garden, ought to be made on behalf of the peach, nectarine and apricot, as soon as those trees are of full bearing size.

Some years ago, we drained a shallow swamp; and though the situation is high and airy, peach trees of the *best bearing kinds* planted there, have always been unproductive. Now the annual cultivation of the soil, doubtless rendered it *more spongy*,* and consequently *more frosty*, because it radiated more heat than the paler and firmer ground. But was this the *only* cause? and if so, did it cause the destruction of the buds in winter, or in the spring?

One fact, however, should not be forgotten: To accelerate the growth of the peach tree when bearing, by either culture or pruning, endangers the fruit. In summer, therefore, the soil should not be disturbed.

The *quince* tree as well as the apple tree, is subject to the attacks of the *borer*. The larva of this insect, resembles the peach worm; but it cuts through the solid wood, and therefore is much more difficult to extract. With a barbed wire, we have often succeeded, and sometimes failed. In a young tree that had been neglected, we found them so deeply intrenched, and their holes so winding, that they kept possession. We then made a small auger hole through the heart of the tree, and filled it with sulphur. A few days after we found one of them in a dying state, and no more filth was ejected. Quince trees should be examined on this account, at least once a year.

* Would the increased radiation from this cause, be counteracted by spreading straw, chaff, or shavings under the trees?

As the pear tree is not infested by the borer, it has been employed as a stock for the quince tree, and if budded or grafted a foot or more from the ground, it must generally be safe from such attacks.

The quince tree like the pear tree, however, is subject to *fire blight*; but only a few inches of the ends of the branches, suffer. Whether this appearance is owing to the more stunted nature of the tree, or to a different insect, is not positively known; but as it is probably caused by an insect, it would be prudent to cut off the dying tops, and burn them.

Though *winter pears* have something like a determinate time for ripening, or becoming soft, yet this period may be accelerated or retarded, by increasing or diminishing the temperature of the place where they are kept. Our experiments on this point within the last year, have been very conclusive. Pears of a sort that had continued hard until spring in a cool cellar, have ripened toward the close of autumn, in a warm room; and by placing them in different temperatures, the season for each particular kind, may be greatly extended.

When *winter fruit* is buried in the ground for long keeping, it should be placed in a box, or on a bed of straw, and be well covered with the same, so as not to come in contact with the damp earth, which causes it to swell, crack, and lose its flavor; and to prevent it from becoming musty, it should be kept in an out-house, till the ground begins to freeze. We have never known fruit to be damaged, that was treated in this manner, and then timely removed in the spring.

CHAPTER IX.

GROWING TIMBER ON THE PRAIRIES.

MANY, very many, of those who have found new homes on the broad prairies of the West, have not regarded merely the advantage to themselves that would result from their removal, but have considered the vastly improved condition of their children. It is to such the subject of arboriculture especially commends itself. A quarter section of timber, sown now far out on the open prairie, with a fortnight's labor bestowed upon it annually for a few years, would, in twenty years, be of itself a rich inheritance. We would not, however, recommend the using of a quarter section by itself; we would advise the farmer to cultivate a strip of timber, of greater or less width, as he can afford, on the north and east sides of his farm. No more land would be used than if it were cultivated in a square piece, and in a few years it would protect the fruit and crops from the severe winds that sweep over the naked prairies.

SUGAR MAPLE.

All good citizens, who are desirous of doing good deeds, and of being remembered by posterity hereafter, we would recommend to transplant a goodly number of sugar maples round their dwellings. We think all will see the propriety of giving their immediate attention to the growing of this most valuable tree, not only for adorning our dwellings, but also, a large number may be set in a suitable place on every farm. They, in a few years,

will afford the pure juice for sugar, and the best of timber for cabinet and other kinds of work, and all poor trees may be worked up for fuel. Our soil is rich and well adapted for the sugar maple.

This tree, beside or around a dwelling is an ornament, and also by the road-side. How pleasant and beautiful would be the scenery, if this tree, in its full growth and splendor, were along each side of our roads! We have seen the maple tree no taller than a walking-staff, become, in fifteen years, so large as to afford sap and sugar. Be not discouraged by looking forward, and say it will be a long time before you can have any benefit by sugar. You must remember the timber is growing every year, and wait with patience, and be assured the other part will not fail.

The sugar maple, if for transplanting, should be of the size of from one to two inches in diameter, and from one to two feet above the ground. Select those of smooth bark, looking young and healthy. We prefer short tops, but if long body and top, cut it off so as to leave the body ten or twelve feet. The tree being carefully taken up and prepared, is to be placed in the ground but one or two inches lower than it stood before. Care should be taken to place fresh earth round the roots, and till well rooted, care should be taken to keep creatures from rubbing against them.

PEACHES.

Those who would raise peach trees should prefer stones that are raised in the north, for if stones from southern peaches be planted, the trees will be tender. The peach is a tender tree, and peculiar to warm climates, and in cultivating it so far from its native climate, care is necessary to success. We must have particular regard to soil,

location, and cultivation; but first of all, we should be cautious to procure hardy stocks.

Some superior kinds of peaches are propagated from the seed, saving the trouble of budding; and such kinds are generally more hardy, productive, and permanent. To propagate a good variety in this way, it must in the first place be a seedling, that is, the tree must be the natural fruit, without budding or grafting. Then the tree must set at a distance from any other kind, lest it mix in the blossom. Some very fine varieties of peaches are now propagated in this way.

When the meat is taken from the stones, cover them up in the earth, or dry them, being careful that they do not mould. Before the ground freezes, put them in the ground, a foot below the surface, first a layer of stones, then a layer of earth. The object in having them so deep is to prevent their cracking; if they are near the surface they may crack—then they will vegetate in the spring before the ground is dry enough for planting; but bury them a foot deep, and they will remain safe even till the last of May. In the spring, when the land is dry enough to work, and is ploughed and prepared for the trees, take up the stones and crack them in evenings or stormy days if you please, and if not ready to plant immediately, lay the meats in a shallow vessel, lay over them a damp paper or cloth, and set them in the cellar; in this way they will keep safe for several days. When ready, plant, covering as you would corn, and the seeds are as sure to come up as corn, if they be good. The seed comes up as well when taken out of the stones as to have the pieces of stones around them.

This is a cheaper way in raising peach trees than to plant in the fall. For when planted in the fall, the stones are not always opened by the frost, and failures

are common. As the land cannot be ploughed in the spring, there will be much extra expense in cultivation.

Peaches require a sandy loam. A fine sand should be preferred, for if they be on a very dry, porous soil, they will suffer with the drought. If the soil be moist, the fruit will be later, of inferior quality, and the wood will grow later—of course it will not ripen so as to endure the cold of winter.

Moderate elevations afford advantages, as in low lands there is more danger from late frosts in the spring, and in such situations the frosts of winter are more severe; and as the sun has more power in low plains, provided the soil be dry, the trees will blossom the earlier, which is a serious disadvantage, as cold weather often succeeds.

On high situations there is more exposure to the winds, and less heat to perfect the fruit; yet in such places peaches often succeed. An eastern exposure is considered most unfavorable. High cultivation is necessary to productiveness and fine fruit.

MANAGEMENT OF ORCHARDS.

Before the ground freezes in autumn, dig the earth five or six inches deep around the fruit trees, and the distance of eight or ten inches from each; remove it to a suitable place and burn it with dry brush, or whatever combustible is convenient, to destroy the germ of the canker-worm and other hurtful insects. Mix this burnt earth with lime or ashes, and a double crop may be expected next season. If any farmer or gardener thinks this too much labor, let him remember, that there is nothing good under the sun obtained without some expense, and that everything in nature has its price. Choice fruit is among the greatest luxuries of the earth, but cannot be obtained without particular attention to the cultivation of the orchard.

TO PREVENT MOSS ON TREES.

An excellent plan for preventing young fruit trees from becoming hidebound and mossy, and for promoting their health and growth, is to take a bucket of soft soap, and to apply it with a brush to the stem or trunk from top to bottom; this cleanses the bark, destroys worms or the eggs of insects; and the soap becoming dissolved by rains, descends to the roots and causes the tree to grow vigorously. A boy can make this wholesome application to several hundred trees in a few hours. If soft soap was applied to peach trees in the early part of April to remove or destroy any eggs or worms that might have been deposited in the autumn, and again in the early part of June, when the insect is supposed to begin its summer deposite of eggs, it is believed we should hear less of the destruction of peach trees by worms. But the application should *not be suspended* for a single season, on the supposition that the enemy had relaxed in his hostility. Try it this spring, and communicate the result with all the circumstances.

TO RESTORE DISEASED PEACH TREES.

Apply salt and saltpetre, combined in the proportion of one part of saltpetre to eight parts of salt; one half pound of this mixture to a tree seven years old and upward, to be applied upon the surface of the ground around, and in immediate contact with the tree; this will destroy the worm, but to more effectually preserve the tree, sow this mixture over any orchard, at the rate of two bushels to the acre. The size of the fruit is increased, and the flavor very greatly improved, the worm destroyed, and the yellows prevented.

It has been mentioned by writers on the culture of the

peach tree, that hot water poured round the trunk at the surface of the ground, will destroy the worm.

Soot has been found excellent for this tree. In one case that has come to our knowledge, its pale leaves were changed into a dark green by this application round its roots; and though the effect may in part have been caused by the destruction of the worm, it has doubtless acted also as a manure. Those who have stove-pipes to clean and peach trees to cultivate, should save the soot for this purpose.

One of the most deplorable conditions that a peach tree can be placed in, is to stand in a meadow or grass ground which is annually mowed. Sometimes we see them in door-yards, where the grass grows strong, but where neither pigs, nor sheep, nor cattle, are allowed to enter. A half starved tree, however, is no ornament in front of a house; but we will not find fault without proposing a remedy. Cultivate a circle round each tree, of two or three feet in diameter; and hoe in manure from the stable, the hog-pen, the hen-roost, the leach-tub, or the wood pile, not forgetting the stove-pipe, and the tree will soon compensate for the labor by its beauty and productiveness.

ON

THE CULTIVATION

OF

DYER'S MADDER;

CURING

PROVISIONS FOR THE ENGLISH MARKET;

LARD OIL, HOPS, ETC. ETC.

THE GILFILLAN FOUNDATION

1923-1924

REPORT OF THE GILFILLAN FOUNDATION

FOR THE YEAR 1923-1924

CHAPTER IX

CULTIVATION OF DYER'S MADDER.

THE quantity of madder consumed annually in the United States, and imported from abroad, is perfectly astonishing to those who have given no attention to the subject. Unfortunately, our public records do not give very exact information on the subject; but Mr. Ellsworth, as the nearest approximation he could obtain, gives the amount as *five thousand tons!* Estimating this at the low average price of ten cents per pound, it makes the round sum of *one million of dollars* paid annually to foreign countries for an article that can be produced as good and as cheap at home, were the information necessary to its production generally diffused among farmers and others interested in the subject.

The cultivation of madder has heretofore been represented as a tedious and laborious operation, requiring much care and skill, as well as outlay of capital. The directions have been mainly gathered from foreign works, detailing the methods practiced by the plodding Dutch in Holland and Germany. These accounts have appeared so frightful to Americans, that none of them have dared to undertake the business; and Yankee enterprise and labor-saving ingenuity have never been exercised upon it.

It is true, the crop requires three or four years to arrive at maturity, and needs considerable labor, and some knowledge; but the quantity of land it occupies, and the amount of labor it requires, is far less in proportion to the value of the crop than those of any other farm-crop that can be named.

These assertions are fully corroborated by the experience of an enterprising American farmer, Mr. Joseph Swift, of Erie county, Ohio, who has been engaged in the culture of madder for five years past. A detailed account of Mr. Swift's mode of culture and its results, was obtained at his residence last winter, by the writer of this essay, and published in the *New Genesee Farmer* for March, 1843.

From this account it will be seen, that after having informed himself on the subject, and becoming satisfied that the business was practicable and profitable, he at once planted *nine acres*. This he allowed to grow four seasons, and the crop was harvested and sold in the fall of 1842. The following are some of the results of his experience. The *product* of his best land was at the rate of 2,000 lbs. per acre, and he is certain that, with his present knowledge, he can obtain 3,000 lbs. per acre—which is more than the best average crops of Holland or Germany. The *quality* was superior to the average of imported madder.

The labor required, including the whole time, with the digging, cleaning, threshing, etc. was from eighty to one hundred days' work per acre. The outlay for buildings, fixtures, etc. did not exceed, in all, fifty dollars.

The value of the crop was at the rate of fifteen cents per pound, at which price he sold most of it—notwithstanding the circumstances of its being unknown to purchasers, and all the prejudice that usually exists in such cases.

The result, then, in figures, fairly stated, stands thus, for an acre of good land properly managed :

By 2,000 lbs. of madder, at 15 cents per lb.....	\$300 00
Contra—To 100 days' work, mostly boys, at 75 cts. per day.....	\$75 00
Use of land, 4 years, at \$4 per year.....	16 00
Grinding, packing, etc.....	9 00
	100 00
Leaving a nett profit per acre, of.....	\$210 00

Mr. Swift was one of the earliest settlers of that section of the country, having resided nearly thirty years on the farm he now occupies, which consists of about 400 acres of choice land, mostly alluvial, in the valley of the Vermillion river, seven miles from Lake Erie. At my request, he furnished me with the following practical directions for the cultivation of madder, which he remarked must be understood as intended for those who wish to cultivate only a few acres, and cannot afford much outlay of capital. Those who wish to engage in the business on an extensive scale, would need to adopt a somewhat different practice :

Soil and preparation.—The soil should be a deep, rich, sandy loam, free from weeds, roots, stones, etc., containing a good portion of vegetable earth. Alluvial “bottom” land is the most suitable ; but it must not be wet. If old upland is used, it should receive a heavy coating of vegetable earth, (from decayed wood and leaves.) The land should be ploughed very deep in the fall, and early in the spring apply about one hundred loads of well-rotted manure per acre, spread evenly, and ploughed in deeply ; then harrow till quite fine and free from lumps. Next, plough the land into beds four feet wide, leaving alleys between, three feet wide, then harrow the beds with a fine light harrow, or rake them by hand so as to leave them smooth, and even with the alleys ; they are then ready for planting.

Preparing Sets and planting.—Madder sets, or seed roots, are best selected when the crop is dug in the fall. The horizontal uppermost roots (with eyes) are the kind to be used ; these should be separated from the bottom roots, and buried in sand in a cellar or pit. If not done in the fall, the sets may be dug early in the spring, before they begin to sprout. They should be cut or broken into

pieces, containing from two to five eyes each ; *i. e.* three to four inches long. The time for planting is as early in spring as the ground can be got in good order, and severe frosts are over, which, in this climate, is usually about the middle of April. With the beds prepared as directed, stretch a line lengthwise the bed, and with the corner of a hoe make a drill two inches deep along each edge and down the middle, so as to give three rows to each bed, about two feet apart. Into these drills drop the sets, ten inches apart, covering them two inches deep. Eight or ten bushels of sets are requisite for an acre.

After Culture.—As soon as the madder plants can be seen, the ground should be carefully hoed, so as to destroy the weeds, and not injure the plants ; and the hoeing and weeding must be repeated as often as weeds make their appearance. If any of the sets have failed to grow, the vacancies should be filled by taking up parts of the strongest roots and transplanting them ; this is best done in June. As soon as the madder plants are ten or twelve inches high, the tops are to be bent down on the surface of the ground, and all except the tip end, covered with earth shoveled from the middle of the alleys. Bend the shoots outward and inward, in every direction, so as in time to fill all the vacant space on the beds, and about one foot on each side. After the first time covering, repeat the weeding when necessary, and run a single horse plough through the alleys several times to keep the earth clean and mellow. As soon as the plants again become ten or twelve inches high, bend down and cover them as before, repeating the operation as often as necessary, which is commonly three times the first season. The last time may be as late as September, or later if no frosts occur. By covering the tops in this manner, they change to roots, and the design is to fill the ground as full of roots as possible. When the vacant spaces are all full, there will be

but little chance for weeds to grow ; but all that appear must be pulled out.

The second year.—Keep the beds free from weeds ; plough the alleys and cover the tops, as before directed, two or three times during the season. The alleys will now form deep and narrow ditches, and if it becomes difficult to obtain good earth for covering the tops, that operation may be omitted after the second time this season. Care should be taken, when covering the tops, to keep the edges of the beds as high as the middle ; otherwise the water from heavy showers will run off, and the crop suffer from drought.

The third year.—Very little labor or attention is required. The plants will now cover the whole ground. If any weeds are seen, they must be pulled out ; otherwise their roots will cause trouble when harvesting the madder. The crop is sometimes dug the third year ; and if the soil and cultivation have been good, and the seasons warm and favorable, the madder will be of good quality ; but generally, it is much better in quality, and more in quantity, when left until the fourth year.

Digging and Harvesting.—This should be done between the 20th of August and the 20th of September. Take a sharp shovel or shovels, and cut off and remove the tops with half an inch of the surface of the earth ; then take a plough of the largest size, with a sharp coulter and a double team, and plough a furrow outward, beam-deep, around the edge of the bed ; stir the earth with forks, and carefully pick out all the roots, removing the earth from the bottom of the furrow ; then plough another furrow beam-deep, as before, and pick over and remove the earth in the same manner : thus proceeding until the whole is completed.

Washing and Drying.—As soon as possible after digging, take the roots to some running stream to be washed.

If there is no running stream convenient, it can be done at a pump. Take large, round sieves, $2\frac{1}{2}$ or 3 feet in diameter, with the wire about as fine as wheat sieves; or if these cannot be had, get from a hardware store sufficient screen-wire of the right fineness, and make frames or boxes about two and a half feet long and the width of the wire, on the bottom of which nail the wire. In these sieves or boxes, put half a bushel of roots at a time and stir them about in the water, pulling the bunches apart so as to wash them clean; then, having a platform at hand, lay them on it to dry. (To make the platform, take two or three common boards, so as to be about four feet in width, and nail cleets across the under side.) On these spread the roots about two inches thick for drying in the sun. Carry the platforms to a convenient place, not far from the house, and place them side by side, in rows east and west, and with their ends north and south, leaving room to walk between the rows. Elevate the south ends of the platforms about eighteen inches, and the north ends about six inches from the ground, putting poles or sticks to support them—this will greatly facilitate drying. After the second or third day drying, the madder must be protected from the dews at night, and from rain, by placing the platforms one upon another to a convenient height, and covering the uppermost one with boards. Spread them out again in the morning, or as soon as danger is over. Five or six days of ordinarily fine weather will dry the madder sufficiently, when it may be put away till it is convenient to kiln-dry and grind it.

Kiln-drying.—The size and mode of constructing the kiln may be varied to suit circumstances. The following is a very cheap plan, and sufficient to dry one ton of roots at a time. Place four strong posts in the ground, twelve feet apart one way, and eighteen the other; the front two fourteen feet high, and the others eighteen; put girts across

the bottom, middle and top ; and nail boards perpendicularly on the outside as for a common barn. The boards must be well seasoned, and all cracks or holes should be plastered or otherwise stopped up. Make a shed-roof of common boards. In the inside, put upright standards about five feet apart, with cross-pieces, to support the scaffolding. The first cross-pieces to be four feet from the floor ; the next two feet higher, and so on to the top. On these cross-pieces lay small poles about six feet long and two inches thick, four or five inches apart. On these scaffolds the madder is to be spread nine inches thick. A floor is laid at the bottom to keep all dry and clean. When the kiln is filled, take six or eight small kettles or hand-furnaces, and place them four or five feet apart on the floor, (first securing it from fire with bricks or stones,) and make fires in them with charcoal, being careful not to make any of the fires so large as to scorch the madder over them. A person must be in constant attendance to watch and replenish the fires. The heat will ascend through the whole, and in ten or twelve hours it will all be sufficiently dried, which is known by its becoming brittle like pipe stems.

Breaking and Grinding.—Immediately after being dried, the madder must be taken to the barn and threshed with flails, or broken by machinery, (a mill might easily be constructed for this purpose,) so that it will feed in a common grist-mill. If it is not broken and ground immediately, it will gather dampness so as to prevent its grinding freely. Any common grist-mill can grind madder properly. When ground finely it is fit for use, and may be packed in barrels like flour for market.

Amount and value of Product, etc.—Mr. Swift measured off a part of his ground, and carefully weighed the product when dried, which he found to be over two thousand pounds per acre, notwithstanding the seasons were

mostly very dry and unfavorable. With his present knowledge of the business, he is confident that he can obtain at least three thousand pounds per acre, which is said to be more than is often obtained in Germany. The whole amount of labor he estimates at from eighty to one hundred days' work per acre. The value of the crop, at the usual wholesale price, (about fifteen cents per pound,) from three to four hundred dollars. In foreign countries it is customary to make several qualities of the madder, which is done by sorting the roots; but as only one quality is required for the western market, Mr. Swift makes but one, and that is found superior to most of the imported, and finds a ready sale.

CHAPTER XI.

COMMUNICATED BY C. T. PETERS, ESQ.

CURING PROVISIONS FOR THE ENGLISH MARKET.

THE revision of the tariff upon provisions, by the English government, will have a much more important bearing upon the agricultural interest of this country, than any, and indeed all the changes that could be safely made in their corn-laws. At present prices, even, without any change in the duty, both beef and pork could be sent to the English market at a profit, if it had been cured in the same manner, and put up in the same kind of packages, which has been so long the custom in that country. It is useless to expect a whole nation to change their customs to suit our views; and if we would avail ourselves of their markets, we must conform to their customs and prejudices; if the fixed and unchanging habits of a whole nation must be called so.

Foreseeing that, at no distant day, the provision business must become the great business of this country, while in Europe, last winter, I endeavored to make myself perfectly familiar with everything connected with the provision trade. I visited the great curing and packing establishments in Ireland, and made myself master of the whole subject of curing and packing provisions. I then visited the great markets of Europe, Liverpool and London, and, under the instruction of some of the oldest and most respectable provision merchants of those cities, endeavored to make myself thoroughly acquainted with everything relative to the wants and peculiar shades of the different

markets. While abroad, I gave you the result of my observations relative to butter and cheese. I now give you, in as condensed a form as possible, the best method of curing and preparing for the English market, beef and pork, and hope it will not be without interest and profit to your numerous readers, especially in the west and south-west.

PORK.

There are various kinds or divisions of pork—depending upon the size and quality of the hog, and the market for which it is intended. There is bacon singed and scalded, which is divided into whole-side bacon or middles. Barreled pork is divided into prime and bacon mess, and is put up into barrels and tierces.

In some parts of England, they will not purchase or use scalded bacon; in others, they make no difference. In this country, the market requires but one kind; and there is but one kind that can be shipped to any profit, and that is known as tierce middles.

Whole-side bacon is prepared by cutting out the chine or back-bone, cutting the head off as close at the ears as possible, and the legs at the knee-joint. The ribs are broken by passing a fine saw across them two or three times, the shoulder-blade taken out, and the whole side trimmed and made to look smooth and sightly. If it is from a heavy hog, the knife is run into the ham so as to enable the salt to penetrate readily to the knuckle-joint, and sometimes about the fore-shoulder. From the cutting-block, it is passed to the rubbing table. Here all the holes are filled with salt, and salt is spread freely over it, and rubbed in by men with a kind of iron glove upon their hands. After the salt has been well rubbed in, the sides are piled up on the floor, in layers of from six to ten deep, flesh side up, salt being freely put between

each side. During the process of curing, the sides are repacked several times, depending upon the weather—sometimes every other day. In about ten days, the meat is sufficiently cured for market. The salt is brushed off clean with a twig broom; the side again carefully trimmed, scraped, and smoothed down, by beating it with a flat board, and then passed to the baling or packing-room. Five sides are put together, and a thin layer of salt between each, and then sewed up in a coarse kind of bagging manufactured for the purpose. In this condition, it is shipped for the London market; and, with a little care, will keep in good order for months. Hams and shoulders are cured in the same manner, except some use saltpetre with the salt when first rubbed in. Many prefer their bacon and hams dried rather than smoked; but, when smoked, great care is taken to keep the meat of as white a color as possible. To do this well, the meat should be quite dry when hung up in the smoke. Competition is very keen among the Irish and Continental provision curers, and great skill is used to make the best article. Hence, the utmost pains are taken in curing and putting up their bacon, hams, and dried beef; and many of the most intelligent men in the country are among the provision merchants of Ireland and Hamburgh. Tierce middles are the middle or broadside of the hog, between the ham and shoulder. It is cured in the same manner as the whole side, but, in preparing for the English market, I should recommend to put it up clear of all bone, and should therefore take out not only the chine, but all the ribs. It is put up in tierces holding about three hundred pounds, and treated the same as salted pork.

A profitable trade might be carried on between western New-York and the New-England States, during the fall and winter, in *baled bacon*, if freight could be carried over the Utica and Schenectady railroad, at reasonable

rates ; and we should not be compelled to keep our pork or beef on hand until the opening of navigation in the spring.

Pork is cut into four or six-pound pieces, according to the size of the hog. Where the carcass weighs two hundred and fifty and under, it is cut into four-pound pieces ; large hogs are cut into six-pound pieces. The hog is first split through the back-bone in half ; then passed to the trimming-block, where the half head and legs are cut off, the leaf and tender-loin taken out, and the whole side split lengthwise through both the shoulder and ham, and as near the centre as is consistent with the proper shape and size of the different pieces. From the trimming-block, the strips pass to the scales, where the weight is ascertained, and called to the man at the cutting-block, who divides each strip into the requisite sized pieces. Both the splitting and piercing require skill and judgment, as much depends upon having the pieces well and sizably cut. From thence it goes to the rubbing-table, where each piece is thoroughly rubbed in salt in the same manner as in curing bacon. After the salt has been well rubbed in, it is put into pickling tubs, holding from three to five hundred pounds, well covered with salt, but no water or brine added. Here they remain from eight to ten days. It is then taken to the washing trough or vat, where each piece is thoroughly washed in clean brine, trimmed, and *tormented*, as the process of trying is called. The *tormentor* is an instrument of wood or metal, the size of a small dish, and is thrust into the lean parts of each piece, to ascertain that it is properly cured and free from taint. It is then messed and weighed, so that the requisite number of pieces shall weigh exactly the number of pounds for the barrel or tierce. It is then put up in the proper package, and freely salted while packing, and saltpetre added at the rate of a common wine-glass

full to the one hundred pounds. The last layer is pounded in by a heavy iron weight, and capped with coarse salt. It is then passed to the cooper, who puts in the head, and puts on to the barrel one, and on to the tierce at least three iron hoops at each end. The package is then filled with clean strong brine, bunged tight, branded, and is then ready for market.

The great utility of this method of curing consists in the certainty of the meat keeping in good condition for years in any climate. The blood gets all drained out of the meat before it is barreled, and hence one great cause of injury is avoided. I saw pork and beef which had been two years in the barrel, which was as sweet as when first put up, and the brine was perfectly clear. A friend in London unpacked several packages of Irish and Hamburgh cured provisions, by the side of American. The contrast was anything but flattering to our taste or skill. I could very readily see why our beef and pork bore so bad a name in the market, and was so much of a drug. The meat was not inferior, but it was badly messed, worse cut and cured, and the brine nearly as red as blood, and presenting, by the side of the other, not a very *palatable* appearance. The large hogs, or heavy pork, which is uniformly cut in six-pound pieces, is packed in tierces, and is then called India or navy pork. The four-pound pieces are put in barrels.

A barrel of *prime pork* should contain from twenty five to thirty pieces, cut from the ribs, loins, chines, and belly pieces, all lying between the ham and shoulder, forming what is called the broadside or middle. Three hands and two hind-leg pieces, or three hind-leg pieces and two hands, and fifteen or twenty pieces from other parts of the hog, except no part of the head. The meat must be of prime quality, firm, and well-fattened, cut into four-pound pieces, exactly fifty to the barrel, and weigh not

less than two hundred pounds nett, and must have a good capping of St. Ubes, or other coarse salt. This is indispensable. *Bacon mess pork* is so called when the full proportion of prime pieces in *prime mess* is withheld; there is, therefore, various classes of bacon pork. Tierces contain the same number, that is, fifty pieces of six pounds, and the same rules as to messing are to be observed as in the barrel. The tierce must have not less than three hundred pounds, and well capped with salt. It is usual to put in fifty-two pieces. In bacon mess, the number of prime mess pieces should be marked upon the head. No part of the hog's head is allowed in any instance.

BEEF

Is uniformly cut into eight-pound pieces, and cured, in all particulars, precisely as pork, except a larger proportion of saltpetre is used in packing. Beef is almost entirely packed in tierces. For export, tierces only should be used.

A tierce of prime India beef should contain forty-two pieces, eight pounds each, and weigh not less than three hundred and thirty-six pounds nett. It should be made from well-fed bullocks, and contain thirty-two pieces of loins, flanks, rumps, plates, buttocks, and briskets; ten pieces, consisting of four chines, two mouse buttocks, two shells of rumps, two pieces cut close up to the neck, with bone taken out; no shins, thigh-bones, or necks. To be well salted, and capped with St. Ubes or other coarse salt.

A tierce of prime Mess beef should contain thirty-eight pieces of eight pounds, and weigh not less than three hundred and four pounds nett. It should be made from prime fat cows or heifers, twenty-eight pieces of prime, from loins and chines, with one rib in each, flanks, rumps,

plates, briskets, and buttocks, with ten coarse pieces, consisting of two neck-pieces, not the scrag, two thighs or buttock bones, with some meat to them, two shells of rumps, two or even four chines, not cut too close to the neck, and two shoulder pieces with part of blade bone in them, well salted and capped with St. Ubes or other coarse salt. The tierces, whether for beef or pork, must be made of well-seasoned oak, with eight wooden, and three iron hoops on each end.

No pains to be spared in preparing and putting up, as the neat and tasty appearance of the packages will insure a more ready sale, than if put up in a slovenly manner.

There is much that one cannot well make intelligible upon paper, and can only be learned by personal observation. I have endeavored to communicate enough to enable any experienced butcher or packer to prepare provisions for a foreign market, if desirous to do so; and the method described is the one in general use in Europe, and, if adopted in this country, will enable us to enter the English market in successful competition with the Continent. I trust the season will not pass, without finding several establishments preparing and curing provisions according to the Irish method.

T. C. PETERS.

Darien, Genesee, Co., New-York.

CHAPTER XII.

LARD OIL, ETC.

MUCH interest has been felt in the subject of oil from lard, and the almost daily inquiries respecting its process of manufacture, and its close connection with the question of disposing of our agricultural products, forms a reason for giving it an extended consideration. Complete success has attended the enterprise. Several large factories for the manufacture of this oil, have been some time in operation in Cincinnati, and thousands of gallons are daily prepared for home consumption and exportation. It is also carried on at Cleveland, Ohio; Chicago, Illinois; Burlington, Iowa; Hannibal, Missouri; and other places both in the Western and the Atlantic states.

It is considered much superior to olive or sperm oil, for machinery, and for the manufacture of woollens, etc. It can be furnished also at half the price, and therefore it will doubtless supersede the article of import. As it contains less gelatine than other oils, it is found much better for combing wool. Repeated experiments, too, have shown that for the purpose of combustion, no oil is superior. It is important, in trying it with this view, to obtain a good article, manufactured from good lard, and not from the dark-burned, which creates smoke and clogs the flame. For want of sufficient care in this respect, some have no doubt met with disappointment in their attempts to substitute this oil for sperm oil in the lamps.

The following are given as the relative constituents of lard oil and sperm oil, in one hundred parts of either :

	Carbon.	Hydrogen.	Oxygen.
Lard oil.....	79.03	11.422	9.548
Sperm oil.....	79.05	11.6	8.9

It will thus be seen that the difference in carbon is only 3.00 ; about the same in hydrogen ; while in oxygen it is about 4.10 in favor of the lard oil. The large quantity of carbon proves that it may be relied on as a material for giving light, as it is well ascertained that whenever carbon predominates in an animal oil the article is capable of a high degree of luminous power. Experiments have been made which resulted in favor of lard oil. About sixty pounds in a hundred of good lard, in tallow, only twenty-eight is oil ; and the processes of manufacture resorted to, show that it may be made a profitable business. Large orders have already been executed at the West for this oil, to be used in the Eastern states.

The importance of this application of lard, can scarcely yet be realized. Vast quantities of the oil can be manufactured at the West. Indeed, there is hardly any assignable limit to the power of production of the article, so that, while the demand continues, the business may be conducted profitably. The immense herds of swine which can be suffered to range over the lands adapted to them, and gather their food from mast, as well as the surplus of corn, wheat, potatoes, etc., on which they may be sustained, admit of the manufacture being carried on to almost any extent.

The proportion of lard to the whole hog is about sixty per cent., after taking out the hams and shoulders, or taking out the hams only ; the estimate for hogs of the best breeds, and so fed as to produce the greatest quantity of fat, is seventy per cent. As the object is not in this case to make pork for food, the objection against those species of nuts, and other modes of feeding, which render the animal more gross and oily, is obviated ; and it has been

proposed to feed out oil cake to swine, to increase the proportion of oil.

By the new process of steaming, (a very simple method, a description of which is given below,) it appears that the whole of the lard, or oily matter in the hog, or of tallow in cattle, may be obtained; while the danger of burning, (common in other modes,) is avoided, the consumption of fuel lessened, and the degree of pressure required not so great as otherwise. It will be recollected that, while conducting the manufacture of the lard, the other parts of the animal, as the hams and shoulders, may be turned to profit. Besides these, also, the hides may be tanned by a cheap process; and the bones, which are worth half a cent per pound, may be calcined and made into animal carbon, for which they are said to be worth, in this calcined state, two and a half cents per pound.

There is a great difference in hogs, as to their frame and the kind of food they have been fattened upon. The average Ohio hogs (common breed,) will produce, when tried by steam, fifty per centum lard, after deducting the hams and shoulders. The plan now generally adopted is, not to take out the shoulders; the sale for them is limited, and price low; the covering of fat will produce more in lard, than the expense of curing would warrant. The mixture of the China and Berkshires, fed upon potatoes or any other vegetable containing starch as a principal food, would produce, when very fat, at least seventy per centum, after taking out *only* the hams.

The steaming apparatus is merely a tub with a false bottom, perforated with holes, lying about two inches above the bottom. The steam is introduced between the two bottoms, and so entirely separates the fat from the cells in which it was inclosed, that no pressing of scraps is necessary. The bones, lean, and scrap, are left on the false bottom, and the lard floats on the surface. With

steam, at a pressure of five pounds to the inch, it will require from eighteen to twenty hours to try off a tubfull of any given quantity, steam in proportion of course ; sixty pounds pressure would do it in one-third the time. The great advantage of steam is, the whole of the lard or tallow is produced, and there is no danger of burning either.

The quality of the lard is good, but not equal to leaf lard or suet ; the carcass fat does not contain as much of the concrete principle, (stearin.) Whole hog lard cannot be refined and made hard without a portion of the oil is extracted. I take from twenty to forty per centum of the oil ; then the balance goes through several washings in pure *rain-water* by steam, after which it is refined lard. The expense is not more than one quarter cent per pound, but it is of more value to us than common lard, as we have a great deal of trouble and expense with it ; and in only extracting a portion of the oil, we would lose by it, did it not command a better price in the market, which it should from its purity.

The custom has been to decompose the lard in acid and neutral salts. When the affinity between the parts is destroyed, separate them by means of canvas bags placed in powerful screw presses. If you wish to make candles of the residue, the pressure is continued until all the oil, by this means, is forced out. The contents of the bags are then subjected to the action of a powerful hydraulic press, and the stearin pressed to dryness.

To produce the winter oil, expose the decomposed lard to the cold, in the same manner that the crude sperm oil undergoes to produce the winter-strained oil. Upon analysis, it is found that the lard oil contains 79 2-10 carbon, and pure sperm oil, 79 5-10 ; making three-tenths of one per centum difference ; the other equivalent of hydrogen and oxygen are the same, excepting the difference of the three-tenths. For all uses, (excepting paint-

ing,) lard oil has no equal. It burns with a strong white light, and is entirely free from either smoke or smell. It does not contain any gelatine, which makes it a preferable article for all kinds of machinery ; for wood it answers better than the olive oil, which it has superseded entirely. The oil of tallow is also well adapted for machinery ; for burning it is not preferable to other oil, on account of its odor. Tallow only contains about twenty-eight per centum of oil, whereas lard contains on the average sixty-two. The stearin of both lard and tallow makes a better and harder candle than sperm, and the same amount in weight produces a great deal more light.

CHAPTER XIII.

HOPS.

The Soil.—The hop is planted on various soils, and chiefly in valleys. They are generally of the best quality on strong clay land: the crop, however, there is very precarious. Those on peat are much more productive; but are liable to be affected by the mould in some seasons, which reduces their value considerably. The best plantations are on a deep loamy soil, where the produce of the latter and the quality of the former are sometimes obtained. Those which are grown on sandy and gravelly lands, are seldom remarkable for either great produce or quality. The best situation for a plantation is a southern aspect, well shaded on three sides either by hills or timber.

Manuring.—In the winter, the manure should be provided for the hop-ground for the following spring. If the dung be rotten, mix with two or three parts of common earth, and let it incorporate together till there is occasion to use it in making the hop hills; but if it be new dung, then let it be mixed as before till the spring in the next year, for new dung is very injurious to hops. Hops require to be planted in a situation so open, that the air may freely pass between and round them to dry up and dissipate the moisture, which often destroys the middle of large plantations, while the outsides remain unhurt. The hills should be seven or eight feet apart. If the ground be intended to be ploughed with horses between the hills, it will be best to plant them in squares, chequerwise; but

if the ground is so small that it may be done with a breast plough, the hills should be arranged in a quincunx form—whichsoever way is made use of, a stake should be stuck down at all the places where the hills are to be made.

The kind of Hops.—As to the kind of hops, it is necessary to pay some attention ; for if the hop garden be planted with a mixture of several sorts of hops, that ripen at several times, it will cause much trouble, and great inconvenience. The two best sorts are the white and gray kind. The latter is a large square hop ; more hardy ; bears more abundantly ; but ripens later than the former. There is another sort of the white kind, which ripens a week or ten days sooner than the former : but this is a tenderer and less plentiful bearer ; though it has this advantage, that it comes first to market. If there be a sort of hop that is valued and wanted to be increased, the superfluous binds should be laid down when the hops are tied, cutting off the tops, and burying them in the hill ; or when the hops are dressed all the cuttings may be saved ; for almost every part will grow and become a good set the next spring.

Planting.—The time for planting hops in Kent, Sussex, and Hertfordshire, England, the greatest hop countries in the world, is either October or March. In Northern Illinois, for the spring, early in April will be soon enough, as they do not start so soon ; but the vegetation is more rapid, and will come to maturity sooner here than the other side the Atlantic. The better time to plant is the spring ; and the cuttings can be procured when the hops are dressed. As to the manner of planting the sets, there should be five good sets to every hill, one in the middle, and the rest round about sloping. Let them be pressed close with the hand, and covered with fine earth ; a stick should be placed on each side of the hill to secure it.

But to form a new plantation, the best method is to have the cuttings from approved stock, planted out the year before they are wanted, in the hop ground; as the use of plants instead of cuttings, not only gains a year, but they are more certain to flourish. A small piece of moist land is sufficient to raise plants for many acres, and at a little expense. If the ground be new, thoroughly subdue it previous to planting. Work the land with a spade, and set it out into ridges three and a half yards wide, and two yards between each. Three rows of plants, or as they are termed hills, are made upon each ridge, which should intersect each other. They are generally two yards distant in the rows; so that about thirteen hundred are the usual number of hills in a statute acre.

Poling.—Small sticks are proper to tie the binds up to, the first year; then small poles for a year or two; the size of which should be gradually increased. Some set two poles to every hill, which is proper for ground producing a luxuriant growth; but on clay land, three poles should be set in a triangular form to the hills, on the outside rows of each ridge, and only two in the middle row. Many additional poles, longer than the rest, catch-poles, are also set up to take the binds as they run beyond the lesser poles. Where the bind is weak, three heads are commonly trained up each pole; though two are better if strong.

Cleaning the ground.—If the ground intended for a new plantation is not clear from couch-grass and weeds, a complete fallow is essential, whether it is grass or stubble; and a crop of turnips may be taken to advantage, if the land be proper for their growth, and can be made clean, as the hops will be planted in the spring.



A

GLANCE AT THE

CONSTITUTION

OF THE

UNITED STATES,

ETC. ETC. ETC.

REVISED EDITION

THE HISTORY OF THE UNITED STATES

BY JOHN B. HENNING

NEW YORK

CHAPTER XIV.

A GLANCE AT THE CONSTITUTION OF THE UNITED STATES, ETC.

It will be both interesting and useful to the emigrant, to have at hand a simple abstract of some of the leading facts concerning the *government* of the country, which he intends to make his home. We will, therefore, devote a chapter or two to this end.

The New World was discovered by Christopher Columbus, in 1492. The inhabitants were a race of people to whom the name of Indians was given. The origin of these people is uncertain. Some suppose that they came from Asia; that they crossed the narrow straits which separate Asia from America, called Behrings Straits. However this may be, the Indian race was in possession of the New World.

Spain took possession of much of the southern territory, such as the West-India Islands, Mexico, Peru, and other regions. France soon took possession of the country on the St. Lawrence river; and England, of many valuable parts of the country now included within the United States.

This territory, which had been taken from the Indian race, soon began to be colonized. In 1607, a band of English emigrants took possession of that large tract of country, which lies between what is now called North Carolina and New Brunswick; a pretty fair slice to begin with, it must be admitted. This tract was afterward divided into smaller districts, and settled by English emigrants.

New-York was settled in 1613, by emigrants from Holland, but in 1644, it became an English colony.

New-England was settled in 1620, by a hardy band of emigrants, most appropriately called *Pilgrims*. At the dead of winter, in a small and leaky vessel called the *Mayflower*, they breasted their way across the ocean, and landed late in December on the iron-bound shores of New-England. They found nothing but a wilderness, and a race of Indians to welcome their arrival. Here they had to build houses, subdue the forest and turn it into fields, and to form a government. Suffering from hunger, cold, hostile Indians, and sickness, they had well nigh perished; but the noble band of Pilgrim emigrants endured all these things, and helped to lay the foundation of a nation.

The rest of the Atlantic coast, was soon afterward taken possession of by colonies; Maryland, in 1634; New-Jersey, in 1664; Pennsylvania, in 1684; North Carolina, between 1640 and 1650; South Carolina, in 1670; Georgia, in 1732; Delaware, in 1627.

It is thus seen that *Emigrants* performed the first great acts in settling the New World. Among these early emigrants, were men of various religious creeds, and various nations. The Puritan, the Roman Catholic, the Church-of-England man, the Quaker, all came over to advance their religion. The English, the French, the Dutch, all were found in the different colonies; even Sweden and Finland had their hand in the great work of colonizing America, Delaware having been settled by a company of Swedes and Finns in the year 1627.

These peculiar features in the early settlement of the New World are full of interest, and are without a parallel in history.

We will pass over the early struggles of these infant colonies, until the year 1776. How much they suffered

no one can tell. That their sufferings were of the severest kind, cannot be doubted. Great, therefore, is the debt which the present age owes to the hardy emigrants who came into the wilderness at that early day.

In 1776, there were thirteen colonies, founded by different nations, and under different laws; though they had all come under the jurisdiction of Great Britain. On her they depended, and called her the mother country.

Troubles of various kinds sprung up between the colonies and the mother country, of which it is not necessary here to speak. These troubles increased, until the thirteen colonies, on the fourth of July, 1776, resolved to be independent; and to constitute a Nation of themselves.

This led to a war of eight years duration, called the War of the Revolution. It resulted in the independence of the colonies, which thenceforward took their place among the nations of the earth, as the United States of America.

A continental Congress was now formed by the united action of the several States, and *articles of confederation* were adopted. This was in 1777. Maryland did not agree to these articles till 1781.

In 1787, the present *Constitution of the United States* was adopted, to which we will now turn.

Before doing so, however, it may be well to observe, that there are now thirty States in the Union, *each one of which has its own peculiar laws for certain purposes*, while, *for other purposes, it permits the General Congress to make laws for it.*

Each State is perfectly independent of every other State, excepting in certain matters, which they have all agreed shall be in common. What these matters are, that are to be in common, we shall briefly mention at the proper time.

It is important that the emigrant fully understand this general idea, and we will illustrate it as follows:

We will suppose that thirty men wish to join their means and their knowledge together, to accomplish a certain end: to open a coal mine, for instance. Each of these men, we will say, has a family of children, a wife and servants.

They meet together, to lay plans to open and work the coal mine. It becomes necessary, of course, that they should have some written agreement among themselves, so as to know what each man's duty is, and what share of the profits and losses is to fall to each. It is very evident that, without such an understanding at the outset, great trouble might arise, and the rights of the weaker be trampled upon by the stronger.

It is also evident, that this written agreement should only refer to the interests of the particular business the thirty men are entering upon—namely, the opening of the coal mine. Their other *business*, whatever it might be, would not be included in the provisions of this coal mining agreement; nor would the education of their children, the management of their families, or anything except that which had a clear connection with the interests of mining.

Suppose that, after a while, some one of the thirty should propose to interfere in the *private* affairs of another of the thirty, and should propose to the company that they take a vote on the subject. What would be the course of the man whose private matters were thus interfered with? *To tell the company to look at the written articles of agreement, and see if that gave them any right thus to interfere.* This would settle the matter at once. Thus it is with the several States of the Union.

The thirteen original States, having certain important objects of mutual interest to secure, such as defending the

nation against a foreign enemy, and the like, agreed upon a sort of partnership; and entered into a written agreement, or understanding, on the subject. This written agreement is called the *Constitution of the United States*. Whatever is clearly written down in this agreement, as belonging to the United States to make laws upon, the Congress of the United States has a right to manage. Whatever is not written down, or plainly implied, is left entirely to the individual States; and Congress has no more right to meddle with it, than have the majority of those who compose the coal-mining company, to meddle with the private affairs of one of the members of the company.

The thirty States are like the thirty men in the coal company: each has a right to manage its own affairs, in its own way, by its own Legislature. The General Government has the right to meddle with such matters *only* as are plainly laid down in the Constitution.

We are thus particular in elucidating this idea, as it is one to which the emigrant is not accustomed.

The General Government, by the terms of the written Constitution, has the power—

To lay and collect taxes, duties, imposts, and excises, to pay the debts and provide for the common defence and general welfare of the United States; but all duties, imposts, and excises, shall be uniform throughout the United States:

To borrow money on the credit of the United States:

To regulate commerce with foreign nations, and among the several States, and with the Indian tribes:

To establish an uniform rule of naturalization, and uniform laws on the subject of bankruptcies, throughout the United States:

To coin money, regulate the value thereof, and of foreign coin, and fix the standard of weights and measures:

To provide for the punishment of counterfeiting the securities and current coin of the United States :

To establish post-offices and post-roads :

To promote the progress of science and useful arts, by securing, for limited times, to authors and inventors, the exclusive right to their respective writings and discoveries :

To constitute tribunals inferior to the supreme court :

To define and punish piracies and felonies committed on the high seas, and offences against the law of nations :

To declare war, grant letters of marque and reprisal, and make rules concerning captures on land and water :

To raise and support armies ; but no appropriations of money to that use shall be for a longer term than two years :

To provide and maintain a navy :

To make rules for the government and regulation of the land and naval forces :

To provide for calling forth the militia to execute the laws of the Union, suppress insurrections, and repel invasions :

To provide for organizing, arming, and disciplining the militia, and for governing such parts of them as may be employed in the service of the United States, reserving to the States respectively the appointment of the officers, and the authority of training the militia according to the discipline prescribed by Congress :

To exercise exclusive legislation in all cases whatsoever, over such district, (not exceeding ten miles square,) as may, by cession of particular States and the acceptance of Congress, become the seat of the Government of the United States, and to exercise like authority over all places purchased by the consent of the Legislature of the States in which the same shall be, for the erection of forts,

magazines, arsenals, dock-yards, and other needful buildings :

The Constitution of the United States is, therefore, a most important document, and it should be read and understood by every emigrant.

The laws of the United States, made in pursuance of the Constitution, are enacted by the

CONGRESS,

which meets annually, on the first Monday in December, at Washington. This body is divided into two houses, the Senate and the House of Representatives.

The senators are chosen for six years, and must be thirty years old before they be elected. There are two senators for each State, be the State large or small.

The members of the House of Representatives must be twenty-five years old. They are chosen for two years by the people of the States they represent. At the present time there are two hundred and twenty-seven representatives ; one being chosen for every 70,680 inhabitants.

The pay of the members of both houses is eight dollars a day while Congress is in session.

OFFICERS OF THE UNITED STATES.

The PRESIDENT is the chief. He is elected for four years, at a salary of twenty-five thousand dollars a year. He is commander-in-chief of the army, the navy, and the militia of the United States. His duty is, to see that all the laws are faithfully executed. He also appoints the chief officers of the army, navy and customs.

He is assisted by several persons called secretaries, (termed *ministers* in Europe,) namely :

THE SECRETARY OF STATE, whose duty it is to manage all the business with foreign Governments ; to give in-

structions to foreign ambassadors and consuls; to treat with the ambassadors from other powers, who reside at the seat of government.

THE SECRETARY OF THE TREASURY takes care of the whole monetary affairs of the government. It is his duty to see that the revenue is collected; the customs properly managed; the light-house system maintained; the avails of the public lands legitimately applied, &c. He must also look forward, and see that no deficiency of funds takes place, and devise plans to keep up the credit and resources of the nation.

THE SECRETARY OF THE HOME DEPARTMENT attends to certain portions of business heretofore transacted in the State, Treasury, and War Departments; among which, it is proposed to embrace those branches connected with the Patent and Land Offices, the Indian Bureau, and all other matters immediately relating to internal affairs. This department was created at the last session of the Thirtieth Congress, and its duties have not been so clearly defined as to warrant the giving of minute particulars.

THE SECRETARY OF WAR has charge of the affairs of the army, and directs its general operations. He has also heretofore attended to negotiations with the Indians.

THE SECRETARY OF THE NAVY has charge of naval affairs generally: such as building and equipping vessels of war, planning voyages for them, and seeing that proper discipline and skill are kept up throughout the navy. The navy is composed of about one hundred vessels of various kinds, including several war-steamers, employing some ten thousand individuals, at an annual expense of nearly eight millions of dollars.

THE POSTMASTER GENERAL has the charge of the mail service of the entire country, which is a most arduous business. His salary is the same as that of the Secretaries of Departments, six thousand dollars. The whole extent

of all the post routes is about one hundred and sixty-five thousand miles.

THE ATTORNEY GENERAL, whose salary is four thousand dollars, exclusive of fees, is also a member of the Cabinet; and, besides attending to certain legal matters of the government, it is his duty to give an opinion on questions of law whenever required by the executive.

The annual expenses of the Government average about twenty-five millions of dollars; but owing to the payment of interest on the public debt, and other temporary demands on the treasury, they are at present one-third more than the ordinary amount. Three-quarters of this is obtained by duties on imposts, and most of the balance by the sale of public lands.

THE PUBLIC LANDS

Are interesting to the emigrant for a variety of reasons. They offer to the millions of the Old World, in the present and future generations, a home of plenty. The lands are generally fertile, and vast quantities of them situated on navigable waters. In another place, (p. 352,) the laws regulating their purchase and sale will be found. The United States own upwards of one thousand millions of acres, which will form a certain income for ages.

POLITICAL PARTIES.

There are two leading parties in the United States, at present known by the names of *Democrat* and *Whig*. These parties are pretty nearly balanced: sometimes one elects the President, and sometimes the other. This equality of strength is a great blessing to the country, for if the party in power conduct improperly, the majority can soon be influenced to turn against it.

CHAPTER XV.

NATURALIZATION AND PRE-EMPTION LAWS.

THE following summary of the naturalization and pre-emption laws of the United States, will be found useful to the emigrant.

Foreigners who are not naturalized, may reside in the United States, and are entitled to the same protection of life, liberty, and property, as native citizens are. They may transact any business they choose, and are subject to no disabilities in their occupations, on account of their being aliens. They are protected in the exercise and enjoyment of their religion, no matter of what creed they may be. They may rent lands, houses, and other property, but in many States they cannot become owners *in fee* of the soil until they are naturalized. This is not a very great objection, however, as they can take lands on long leases, extending through their lifetime, and beyond it. On becoming naturalized, they can hold land in fee, the same as native citizens.

Any free white person may become naturalized. In order to be so, he must take the following steps :

First. He must apply to the circuit or district court of the United States, or to any court of record of any individual State. This application must be made at least two years before he is admitted to citizenship. He must declare an oath or affirmation,

“That it is bona fide his intention to become a citizen of the United States, and to renounce for ever all allegiance and fidelity to every foreign prince, potentate, state or sovereignty whatsoever, and particularly, by name, the prince, potentate, state or sovereignty whereof such alien may at the time be a citizen or subject.”

Second. At the expiration of these two years, he may apply for his certificate of citizenship, when he will have to make oath or affirm,

“ That he will support the Constitution of the United States, and that he does absolutely and entirely renounce and abjure all allegiance and fidelity to every foreign prince, potentate, state or sovereignty whatsoever ; and particularly, by name, the prince, potentate, state or sovereignty whereof he was before a citizen or subject.”

It is necessary to remark, however, that a *two year's residence* in the United States is not sufficient to entitle an alien to citizenship. *He must have resided in the United States five years ;* but it is not necessary to make known his wish to become a citizen, until two years before the expiration of the five.

Before granting the certificate, the court will require proof that the alien has resided in the country five years, stating the place or places of his residence ; and one of the five years in the State or territory where he applies for naturalization.

If the applicant shall have borne any hereditary title or order of nobility, he must formally renounce such ; he must also be a person of good moral character.

After he receives his certificate, he enjoys the full immunities of native citizens ; he can vote, hold office, own land in fee, -etc. etc. He is not eligible, however,

1. To the office of President of the United States.
2. To the office of Vice President of the United States.
3. To the office of Governor in New-York, and several other States in the Union.

PRE-EMPTION RIGHTS, OR THE RIGHT OF PURCHASING BEFORE OTHERS.

The United States Government owns, at the present time, as we have said, about one thousand millions of

acres of wild lands ; situated in many of the States and Territories. The price at which these lands are sold, is one dollar and twenty-five cents per acre.

In various places at the West, and elsewhere, there are government land-offices, at which the purchaser must apply to transact any business he may have relative to this matter. It is not necessary to name the localities of the various land-offices, as the settler will readily ascertain which is the one to which he should go.

Under certain circumstances, which it is not necessary that we should name here, settlers may take possession of certain vacant government lands. As this is a subject of great interest to Western settlers, we subjoin the law which regulates it, together with the forms necessary to be observed in making application as a preëmtor.

This law, it will be perceived, has been in operation several years, and has been found generally satisfactory to all parties. Since its passage, it has undergone some slight modifications, chiefly for temporary purposes, but its principal provisions remain unaltered.

AN ACT TO GRANT PRE-EMPTION RIGHTS.

Sec. 10. *And be it further enacted*, That from and after the passage of this act, every person, being the head of a family, or widow, or single man, over the age of twenty-one years, and being a citizen of the United States, or having filed his declaration of intention to become a citizen as required by the naturalization laws, who, since the first day of June, A. D. eighteen hundred and forty, has made, or shall hereafter make, a settlement in person on the public lands to which the Indian title had been, at the time of such settlement, extinguished, and which has been, or shall have been surveyed prior thereto, and who shall inhabit and improve the same, and who has or shall erect a dwelling thereon, shall be, and is hereby authorized to enter with the register of the land-office for the district in which such land may lie, by legal subdivisions, any number of acres not exceeding one hundred and sixty, or a quarter section of land, to include the residence of such claimant,

upon paying the United States the minimum price of such land, subject, however, to the following limitations and exceptions: No person shall be entitled to more than one pre-emptive right by virtue of this act; no person who is the proprietor of three hundred and twenty acres of land in any State or Territory of the United States, and no person who shall quit or abandon his residence on his own land to reside on the public land in the same State or Territory, shall acquire any right of pre-emption under this act; no lands included in any reservation by any treaty, law, or proclamation of the President of the United States, or reserved for salines, or for other purposes; no lands reserved for the support of schools, nor the lands acquired by either of the two last treaties with the Miami tribe of Indians, in the State of Indiana, or which may be acquired of the Wyandot tribe of Indians in the State of Ohio, or other Indian reservation to which the title has been or may be extinguished by the United States at any time during the operation of this act; no sections of land reserved to the United States alternate to other sections granted to any of the States for the construction of any canal, railroad, or other public improvement; no sections or fractions of sections included within the limits of an incorporated town; no portions of the public lands which have been selected as the site for a city or town; no parcel or lot of land actually settled and occupied for the purposes of trade and not agriculture; and no lands on which are situated any known salines or mines, shall be liable to entry under and by virtue of the provisions of this act. And so much of the proviso of the act of twenty-second of June, eighteen hundred and thirty-eight, or any order of the President of the United States, as directs certain reservations to be made in favor of certain claims under the treaty of Dancing-rabbit creek, be, and the same is hereby, repealed; *Provided*, That such repeal shall not affect any title to any tract of land secured in virtue of said treaty.

Sec. 11. *And be it further enacted*, That when two or more persons shall have settled on the same quarter section of land, the right of pre-emption shall be in him or her who made the first settlement, provided such persons shall conform to the other provisions of this act; and all questions as to the right of pre-emption arising between different settlers, shall be settled by the register and receiver of the district within which the land is situated, subject to an appeal to and a revision by the Secretary of the Treasury of the United States.

Sec. 12. *And be it further enacted*, That prior to any entries being made under and by virtue of the provisions of this act, proof of the settlement and improvement thereby required, shall be made to the

satisfaction of the register and receiver of the land district in which such lands may lie, agreeably to such rules as shall be prescribed by the Secretary of the Treasury, who shall each be entitled to receive fifty cents from each applicant for his services to be rendered as aforesaid; and all assignments and transfers of the right hereby secured prior to the issuing of the patent, shall be null and void.

Sec. 13. *And be it further enacted*, That before any person claiming the benefit of this act shall be allowed to enter such lands, he or she shall make oath before the receiver or register of the land district in which the land is situated, (who are hereby authorized to administer the same,) that he or she has never had the benefit of any right of pre-emption under this act; that he or she is not the owner of three hundred and twenty acres of land in any State or Territory of the United States, nor hath he or she settled upon and improved said land to sell the same on speculation, but in good faith to appropriate it to his or her own exclusive use or benefit; and that he or she has not, directly or indirectly made any agreement or contract, in any way or manner, with any person or persons whatsoever, by which the title which he or she might acquire from the Government of the United States, should enure in whole or in part, to the benefit of any person except himself or herself; and if any person taking such an oath shall swear falsely in the premises, he or she shall be subject to all the pains and penalties of perjury, and shall forfeit the money which he or she may have paid for said land, and all right and title to the same; and any grant or conveyance which he or she may have made, except in the hands of bona fide purchasers, for a valuable consideration, shall be null and void. And it shall be the duty of the officer administering such oath, to file a certificate thereof in the public land-office of such district, and to transmit a duplicate copy to the General Land Office, either of which shall be good and sufficient evidence that such oath was administered according to law.

Sec. 14. *And be it further enacted*, That this act shall not delay the sale of any of the public lands of the United States beyond the time which has been, or may be, appointed by the proclamation of the President, nor shall the provisions of this act be available to any person or persons who shall fail to make the proof and payment, and file the affidavit required before the day appointed for the commencement of the sales as aforesaid.

Sec. 15. *And be it further enacted*, That whenever any person has settled or shall settle and improve a tract of land, subject at the time of settlement to private entry, and shall intend to purchase the same un-

der the provisions of this act, such person shall in the first case, within three months after the passage of the same, and in the last within thirty days next after the date of such settlement, file with the register of the proper district a written statement describing the land settled upon, and declaring the intention of such person to claim the same under the provisions of this act ; and shall, where such settlement is already made, within twelve months after the passage of this act, and where it shall hereafter be made, within the same period after the date of such settlement, make the proof affidavit, and payment herein required ; and if he or she shall fail to file such written statement as aforesaid, or shall fail to make such affidavit, proof, and payment, within the twelve months aforesaid, the tract of land so settled and improved shall be subject to the entry of any purchaser.

Approved, September 4, 1841.

FORMS FOR BUSINESS AT THE LAND OFFICES.

AFFIDAVIT REQUIRED OF PRE-EMPTION CLAIMANTS.

FORM A.

I A. B., claiming the right of pre-emption under the provisions of the act of Congress, entitled "An act to appropriate the proceeds of the sale of the public lands, and to grant pre-emption rights," approved September 4, 1841, to the quarter of section number , of township number , of range number , subject to sale at , do solemnly swear, [or affirm, as the case may be,] that I have never had the benefit of any right of pre-emption under this act ; that I am not the owner of three hundred and twenty acres of land in any State or Territory of the United States, nor have I settled upon and improved said land to sell the same on speculation, but in good faith to appropriate it to my own exclusive use or benefit ; and that I have not, directly or indirectly, made any agreement or contract, in any way or manner, with any person or persons whatsoever, by which the title which I may acquire from the Government of the United States should enure, in whole or in part, to the benefit of any person except myself

(Signed)

A B.

I, C. D., register [or E. F., receiver] of the land office at , do hereby certify, that the above affidavit was taken and subscribed before me, this day of , A. D. 184 .

(Signed)

C. D., *Register.*
Or, E. F. *Receiver*

FORM B.

FOR CASES WHERE THE LAND CLAIMED SHALL HAVE BEEN RENDERED
SUBJECT TO PRIVATE ENTRY SINCE THE DATE OF THE LAW.

I, A. B., of _____, being [the head of a family, or widow, or single man, over the age of twenty-one years, as the case may be, a citizen of the United States, or having filed my declaration to become a citizen as required by the naturalization laws, as the case may be,] have since the first day of _____, A. D. 184 _____, settled and improved the _____ quarter of section number _____, in township number _____ of range number _____ in the district of lands subject to sale at the land-office at _____, and containing _____ acres, which land *has been rendered subject to private entry since* the passage of the act of 4th September, 1841, but prior to my settlement thereon; and I do hereby declare my intention to claim the said tract of land as a pre-emption right, under the provisions of said act of 4th September, 1841.

Given under my hand, this _____ day of
A. D. 184 _____.

(Signed)

A. B.

In presence of C. D.

FORM C.

FOR CASES WHERE, AT THE DATE OF THE LAW, THE LAND CLAIMED
WAS SUBJECT TO PRIVATE ENTRY.

I, A, B., of _____, being [the head of a family, or widow, or single man, over the age of twenty-one years, as the case may be, and a citizen of the United States, or having filed my declaration to become a citizen as required by the naturalization laws, as the case may be,] have, since the first day of June, 1840, to wit: on the _____ day of _____, A. D. 184 _____, settled and improved the _____ quarter section, number _____, in township number _____, of range number _____, in the district of lands subject to sale at the land-office at _____, and containing _____ acres, which land *was subject to private entry at the passage of* the act of 4th September, 1841; and I do hereby declare my intention to claim the said tract of land as a pre-emption right under the provisions of said act of 4th September, 1841.

Given under my hand, this _____ day of
A. D. 184 _____.

(Signed)

A. B.

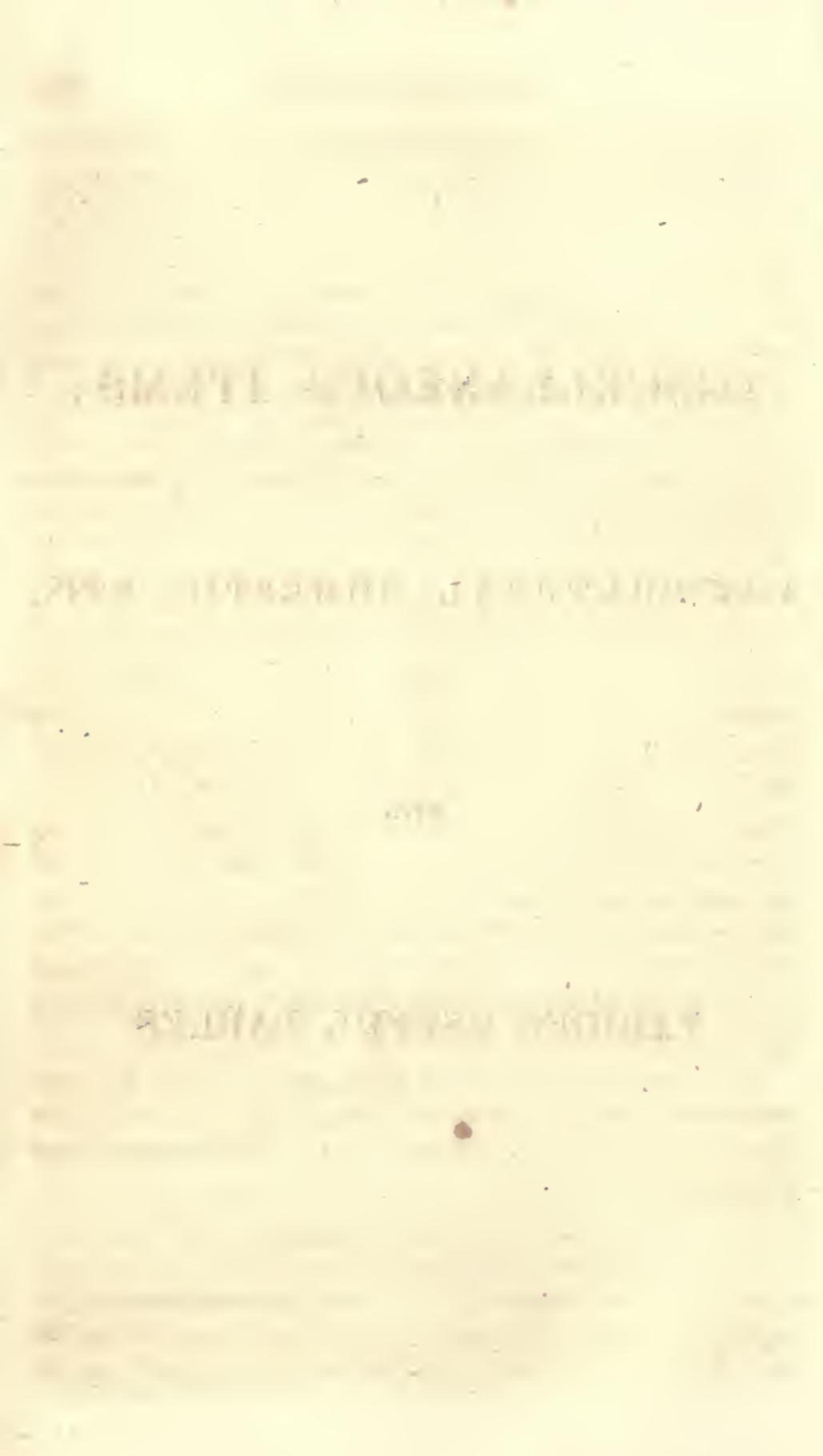
In presence of C. D.

MISCELLANEOUS ITEMS;

AGRICULTURAL, DOMESTIC, ETC.,

WITH

VARIOUS USEFUL TABLES.



CHAPTER XVI.

MISCELLANY.

IN this department a great variety of *tables, hints, facts, recipes*, and the like are given ; without any regard to order of classification. They will all be found useful.

TO MAKE BLACK SALTS.

Set up a leach. . This is done by taking a strong cask, or tub made on purpose. Bore a hole in the bottom, and place the cask on some blocks of wood to raise it up from the ground, so as to catch the water which drops from the hole in the cask. Then place on the bottom of the barrel, inside of it, three or four pieces of wood or bricks, and a layer of clean straw on the top of them. Now fill the leach with ashes. Keep the ashes thoroughly wetted with *hot* water, (if possible,) and keep it dripping till the lye loses its color. The lye must then be boiled in kettles or pans until it crystallizes dry. These black salts always find a ready cash market.

It is scarcely possible to give very definite information on such simple matters. The emigrant's neighbors can, and will teach him more of such little matters than a book can.

TO MAKE MAPLE SUGAR.

A brief description of the process is given as used by the citizens of Vermont in the manufacture of sugar from the sap of the maple-tree. The process in the early settle-

ment of the State was very simple, being nothing more than evaporating the sap in iron kettles, usually about the capacity of ten gallons each, suspended over a fire made of logs, in the open air. When the sap is evaporated in the ratio of about ten or twelve gallons into one, the product is taken from the kettles, and strained through a flannel bag, which takes from the syrup the leaves, coals, etc., which get into the kettles while over the fire. The syrup is then put into deep vessels, where it remains for two or three days, to settle. The syrup is then carefully taken from the vessels, leaving the sediments, and returned to the kettles, with the addition of about a pint of skim-milk to a kettle containing eight or nine gallons of syrup. It is then slowly heated, when most of the impurities remaining in the syrup will rise to the surface, and may be taken off with a skimmer. The syrup is then evaporated to the proper consistency, which is ascertained by cooling small quantities in a spoon, or in some small vessel. The product is then taken from the fire, and either stirred until it is cool, by which it becomes dry sugar, or, more commonly, it is put into a tub or trough, and left to cool, without stirring. This is afterward drained by drawing a plug from the bottom of the tub or trough, thus separating the molasses from the sugar.

In the early settlement of the State, and even at the present time, in new settlements, the above has been the usual mode of making sugar.

In the older settlements, buildings are erected within or near the sugar-orchards. In these buildings, large kettles are set in brick furnaces, for the purpose of evaporating the sap. In some of them, shallow pans, made of sheet-iron, about six inches in depth, and of various dimensions, are also used. These pans are also set in brick furnaces, and are believed to evaporate much faster than deep kettles of the same capacity.

The common method of extracting the sap from the maple is, by boring into the tree, about two inches, with a three-quarter inch bit or auger. The sap is then conveyed into small tubs, holding three or four gallons each, called sap-buckets, by spiles slightly inserted into the tree. It takes about four gallons of sap to make one pound of sugar. The season for making sugar in Vermont commences between the middle of March and the first of April, as the spring is more or less forward, and lasts about three weeks. One hundred good trees will yield sap sufficient to make from three to five hundred weight of sugar.

The following person received the New-York State Agricultural Society's first premium, for the best maple sugar.

To the Committee on Maple Sugar of the New-York State Agricultural Society.

GENTLEMEN: I herewith submit to your inspection 40 lbs. of my maple sugar. The following is a statement of the manner of making and clarifying the same:

In the first place I make my buckets, tubs and kettles all clean—I boil the sap in a potash kettle, set in an arch, in such a manner that the edge of the kettle is defended all round from the fire. I boil through the day, taking care not to have anything in the kettle that will give color to the sap, and to keep it well skimmed. At night I leave fire enough under the kettle, to boil the sap nearly or quite to syrup by the next morning; I then take it out of the kettle and strain it through a flannel cloth into a tub, if it is sweet enough, if not, I put it into a caldron kettle, (which I have hung on a pole, in such a manner that I can swing it on and off the fire at pleasure,) and boil it till it is sweet enough, and then strain it into the tub and let it stand till the next morning. I then take it, and the syrup in the kettle, and put all together into the caldron,

and sugar it off. I use to clarify, say one hundred pounds of sugar, the whites of four or five eggs well-beaten, about one quart of new milk, and a spoonful of saleratus, all well mixed with the syrup before it is scalding hot. I then make a moderate fire directly under the caldron, until the scum is all raised, then skim it off clean, taking care not to let it boil so as to rise in the kettle before I have done skimming it; I then sugar it off, leaving it so damp that it will drain a little, until it is well granulated; I then put it into boxes made smallest at the bottom, that will hold from fifty to seventy pounds, having a thin piece of board fitted in two or three inches above the bottom, which is bored full of small holes to let the molasses drain through, which I keep drawn off by a tap through the bottom. I put on the top of the sugar in the box a clean damp cloth, and over that a board well fitted in, so as to exclude the air from the sugar. After it has done, or nearly done draining, I dissolve it and sugar it off again, going through with the same process in clarifying and draining as before.

I do certify, that the above is a correct statement of my mode of making maple sugar.

JOEL WOODWORTH.

WHICH SIDE OF THE HOUSE TO PLOUGH, PLANT ORCHARDS,
TRUCK-PATCHES, ETC.

Very few persons, particularly emigrants, when they settle in a new country, appear to know which side of their dwelling-house to plough, to avoid sickness, and very many farmers, in our older settlements, appear to be in want of the same information as to where they should avoid planting orchards, truck-patches, etc., to save their families from summer and autumn fevers.

Never plant them, when you can possibly avoid it, on

the western or south-western side of your dwelling, except at a considerable distance from the house; for the rotting of the fruit, melons, squashes, and other like articles, in very warm sickly weather, produces a pestilential effluvia; and the air, which generally blows from the west and the southwest in the sickly months, carries it directly, both day and night, to your dwelling, and more or less sickness is the consequence. And for the same reason, persons settling in a new country should not, for the first three or four years at least, plough any ground on the south or west of their dwellings; as the new ground, which is rich and highly productive, is filled with small roots, which, upon being ploughed up and exposed to the sun, decompose and rot very fast, and send off a sickly miasma and pestilential effluvia, which invariably produces sickness and frequently death; while the afflicted family have not the most remote idea of the cause, and how easily it might in a great measure be avoided. Hence we frequently see that some families in the country have much sickness in the hot months, while others within a mile of them are healthy. Thus the great difference between the healthy and sickly side of the Illinois and other rivers of the West, particularly those having much bottom or valley ground that is sometimes overflowed.

Ask any observing person in the neighborhood of Peoria or Peru, Illinois, and they will tell you that the easterly and north-easterly side of the river is very sickly in hot weather; and why? because the western wind is blowing the miasma of the valley of the stream to its eastern side.

But it may be asked, Is the ground on the western side of the house in a new country never to be ploughed? we answer, yes, but not at first. Begin by ploughing for the first three or four years, until you get acclimated, on the easterly or northerly side, and gradually approach the

other side, and when at length you are compelled to break the ground on the western and southern side of the house, do it late in the fall or early in the spring, and thereby much sickness may be avoided.

Farmers in the old States may ask what they are to do with ground on the westerly side of their dwellings? We answer, put in grain, grass or the like, but not fruit or truck *near* the house on the *westerly side*.

The above hints are vastly more important than they may at first appear to be. Try them.

INDIAN CORN SUGAR.

This new article of Western product is every way worthy of notice here. The public has been so often imposed upon by new articles of growth and manufacture, that there are prejudices against those which are really valuable.

One thing is *certain*, namely, that in a particular state of the plant, *the corn-stalk is full of sweet juice*. Here we have the material out of which sugar is made, in great abundance. Why should not the rich prairies furnish all the sugar that the country will need, and even ship it to Europe?

The following article is from the published transactions of the New-York Agricultural Society :

It is now but three or four years since it was discovered that sugar could be made from the corn-stalk. Very little attention was given to the subject, until the appearance of a report made to Congress by Mr. Ellsworth, Commissioner of Patents. The account given by him of experiments made the preceding year, which he had collected from the different parts of the United States ; the great amount of practical information embraced in the report, together with the very interesting and important character given to the subject, awakened public attention.

The fact, too, that a new method of producing another almost indispensable article, discovered about the same time, and which had already been brought to considerable perfection, had proved so triumphantly successful, has perhaps had an influence in leading us on to expect that soon sugar would be as easily produced from the corn-stalk, as oil now is from hogs-lard. Indeed, so obvious is it to every considerate person, that the position once established that sugar can be produced in this way, it is no less than bringing an article almost indispensable as a part of our daily food, and a most healthful and harmless luxury, as much within reach of every family in the United States, as the very corn has been from which it is produced.

Viewing the subject in this light, perhaps, induced the Executive Committee of the New-York State Agricultural Society, to offer the very liberal premium of one hundred dollars for the "best experiment" in testing the value of the crop, and the practicability of cultivating it. The thing was new—much expense must be incurred—a mill and other apparatus must be constructed—"the juice extracted by iron rollers, so as to obtain the maximum quantity of sugar"—one acre of northern corn, cultivated for the purpose, to be submitted to the test. With all the above requisitions, I have endeavored fully to comply; and now the last, but not least, to make a "full report of the process and expense," remains to be done.

So great is the interest felt upon this subject, that it is presumed a minute account of the process will be expected. In the performance of this duty I must claim the indulgence of the committee, for the writing of reports is new business to me.

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 with the soil by twice 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 kernels in a hill. Corn came up fine, and was plastered the 31st of May; hoed the first time the 9th and 10th of June, the second time 24th of 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 most luxuriantly, withered and dried; 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 crystallizing. 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, 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 of September the stalks appeared in the right stage, and the 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 stalks were wanted for use; this labor was generally performed by boys. The corn-field being at a little distance from the mill, the horse used for grinding was put before a light wagon, and driven to the field; the stalks were then cut and placed upon a 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 the 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.

The 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 was produced.

The Boiler.—The boiler or pan, I made of a sheet of Russian iron, turned up at the sides and ends, lapped and riveted 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 strength required, so that the work of crushing the stalks should be performed with certainty and dispatch, was no easy task. I flatter myself, that I have in this been tolerably successful. The rollers and iron-work, patterns, etc., 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 expense 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 round 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 the 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 corn-stalk sugar, and that all 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 crystallized sugar, the cause should be sought here. Unless the juice of corn-stalks can be clarified, it is vain to expect a pure article of crystallized sugar. All the obstacles to the complete success of this enterprise 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, etc.; these were used separately and combined, 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 corn-stalk 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 crystallization. But, however necessary it may be, it is scarcely possible, with any apparatus that I have any knowledge of, to perform the whole labor 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 crystallizing 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 corn-stalk; as for instance, when it will flank 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 perhaps the safest test. Very great care is necessary, here, that it is 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 who have made experiments with corn-stalk 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 cool 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 crystallized, 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 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 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 one hundred and ninety-five 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 stalks 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 of 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.

EXPENSE.

For the rent of land,.....	\$3 00
“ thirty loads of manure 1s. per load,.....	3 75
“ drawing 30 loads manure 10c. per load,.....	3 00
“ ploughing, harrowing and fitting ground,.....	2 34
“ planting, plastering, cultivating and hoeing,.....	5 87
“ seed-corn and plaster,.....	0 68
“ spreading manure.....	0 88
	<hr/>
The whole expense of raising one acre corn-stalk,.....	\$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; therefore,

The amount brought forward,.....	\$19 52
To six days' stripping leaves, etc.,.....	4 50
	<hr/>
The whole expense up to the cutting of the stalks is.. ...	\$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 in 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 forward,.....	\$24 02
To 12 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 3-4 cord of wood at 12s. per cord,.....	1 12

The whole expense of manufacturing the 600 pounds is \$36 40

Or a fraction more than six cents per pound.

Some credit might 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 something; horses and cattle eat them very greedily when they are fresh from the mill.

REMARKS AND SUGGESTIONS, BY WAY OF RECAPITULATION.

1. If good crystallized sugar, of pleasant flavor, shall be produced from the corn-stalk, I can 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 adapted 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, grind immediately; 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 anything 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 crystallization. This is true of the maple juice, and probably more so of the corn-stalk. 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 is 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 time for more perfect and expensive machinery.

If the result of this enterprise depended on the amount of saccharine matter contained in the corn-stalk, 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 corn-stalk. Of the expense of growing an acre of corn-stalks, 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 corn-stalk 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 forth-coming 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.

With these remarks, I submit this report. I have endeavored 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 corn-stalk sugar of the best quality. This might stimulate, not only a greater amount, but more careful experiment.

TO MAKE CORN-STALK SUGAR.

1st. Cut the cane as ripe as possible, but before any acetic acid is formed; litmus paper, touched to the fresh-cut cane, will turn red if acid.

2nd. Express the juice without loss of time, as every moment after cutting will deteriorate its quality.

3rd. A small quantity of clear lime-water (say one quart to a hundred gallons of juice, should be added the moment it is expressed, unless the juice shows acidity with litmus paper; in that case, no lime should be used, but a solution of sal soda, or soda ash, should be added, until it is precisely neutral.

4th. When the juice is neutral, (free from excess of acid

or alkali,) it should be evaporated in such an apparatus as would finish its charge in 30 minutes; if the boiling power is too small, good crystallization cannot possibly be obtained.

The whole time occupied from the cutting of the cane to finishing its boiling should not exceed one hour.

5th. *To know when the boiling is finished*, place a thermometer in the kettle, and continue to evaporate until it stands at 230° Fahrenheit. If, when placed to run off after cooling, it should be found too freely boiled, the next time boil to 240°, or, if too light to run off, to 238°, and so on.

6th. The kettle or boiler should be so arranged, that the moment it is done, its charge should be thrown into a cooler, capable of holding a number of charges. The first charge should be left in the cooler, with stirring, until the second charge is thrown in; then with an oar scrape the crystals found on the side and bottom of the cooler loose, and gently stir the whole mass together, (the less stirred the better,) so continue, at the letting in of each charge, to stir gently; and when all is in the cooler, let the whole stand until it cools down to 175°; then fill out into sugar moulds of a capacity not less than 14 gallons. When cooled in the mould sufficient, (say fourteen hours,) pull the plug out of the bottom of the mould, and insert a sharp point, nearly as large as the hole, some six inches; withdraw the point, and stand the mould on a pot to drip.

7th. If the sugar is intended to be brown, leaving it standing on the spot for a sufficient length of time, in a temperature of 80°, will run off its molasses, and leave it in a merchantable shape; it will probably require twenty days. It can then be thrown out of the moulds, and will be fit for use. When moulds cannot be obtained, conical vessels of wood or metal, with a hole at the tip, will answer equally as well.

The above description will be sufficient for any operator if strictly followed.

BROOMCORN.

There are several *varieties* raised in Hampshire county, Massachusetts, in the valley of the Connecticut river, principally in the broad meadows of Northampton, Hadley, and Hatfield. The *pine-tree* kind is regarded as the poorest kind, or the least advantageous for cultivation; yet, as it is the earliest, (being three weeks earlier than the large kind,) in a short season, when its seeds will ripen, while the seeds of the other kinds fail to ripen, this may prove the most profitable crop. The North River crop is ordinarily the best crop; it is ten days earlier than the large kind, and yields about 720 pounds of the *brush* per acre—the brush meaning the dried *panicles*, cleaned of the seed, with eight or twelve inches of the stalk. The New Jersey, or *large kind*, yields a thousand or eleven hundred pounds of brush per acre. The stalks and seeds are large. In good seasons, this is the most profitable crop. There is also the *Shirley* or *black brush*. Soil rich, alluvial lands are best adapted for the broomcorn, more especially if warmly situated, protected by hills, and well manured.

Method of Planting.—The broomcorn is planted in rows about $2\frac{1}{2}$ or 3 feet apart, so that a horse may pass between them with a plough or cultivator, or harrow. The hills in each row are from 18 inches to 2 feet apart, or farther, according to the quality of the soil. The quantity of seed to be planted is estimated very differently by different farmers—some say that half a peck is enough per acre, while others plant half a bushel, and some a bushel, in order to make it sure that the land shall be well stocked. The rule with some is to cast a tea-spoonful, or 30 or 40 seeds, in a hill; the manure at the time

of planting should be put in the hill, and old manure or compost is preferred, as being most free from worms.

Cultivation.—The broomcorn should be ploughed and hoed three times the last time when about three feet high, though some hoe it when it is six feet high, and when they are concealed by it as they are toiling in the field. The number of stalks in a hill should be from seven to ten. If there are only five or six stalks, they will be larger and coarser; if there are about eight, the brush will be finer and more valuable. In the first hoeing, the supernumerary stalks should be pulled up.

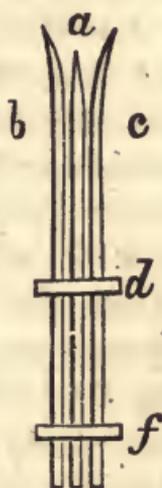
Harvesting.—As the frost kills the seed, the broomcorn is harvested at the commencement of the first frost. The long stalks are bent down at two or two and a half feet from the ground; and by laying those of two rows across each other obliquely, a kind of table is made by every two rows, with a passage between each table, for the convenience of harvesting. After drying for a few days, the brush is cut, leaving of the stalks from six to twelve inches. The longer it is cut, of course, the more it will weigh; and if the purchaser does not object, the benefit will accrue to the farmer. However, the dry stalk weighs but little; if its weight is excessive, the purchaser sometimes requires a deduction from the weight. As it is cut, it is spread on the *tables*, still further to dry. As it is carried into the barn, some bind it in sheaves; and this is a great convenience for the further operation of extracting the seed. Others throw the brush into the cart or wagon, unbound.

Scraping.—The process of extracting the seed is called “scraping the brush.” Two iron horizontal scrapers are prepared; one movable, to be elevated a little, so that a handful of brush may be introduced between them. The upper scraper is then pressed down with one hand, and the brush drawn through with the other, the seed being

scraped off. This is the old method. A newly invented scraper is superseding the old one. It is an upright instrument of elastic wood or steel, inserted in a bench of a convenient height for the operator.

The form is as follows :

a is a piece of wood or steel, immovable ; *b* and *c* are pieces which are *elastic*, movable to the right and left at the top, but fastened to the central piece below. The degree of elasticity may be regulated by wedges in the planks *d* and *f*—wedges in the hole through which the pieces pass.

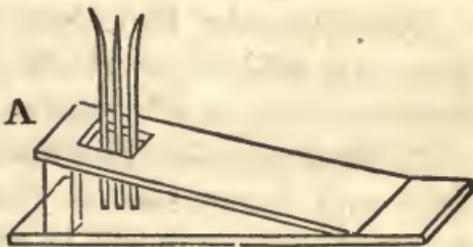


A quantity of brush is taken in the hand, and brought down upon the top of this instrument. As it is forced down, and drawn toward the body, it separates the elastic sticks from the central piece, but their elasticity presses sufficiently on the brush, so that the seed is scraped off.

The advantage of this scraper is, that both hands may be applied to the brush, instead of only one hand, as in the other kind, and the elastic power of nature is substituted for the pressure of one of the hands. The instrument also seems to double the scraping surface. The instrument was invented at Hartford. We have been told it has not been patented.

The following plan may, therefore, be useful. The operator stands at the end *A*.

The lower plank may rest on the barn floor, or have *A* short legs. The upper oblique has a hole, through which the scraper passes,



and down which the seed may fall. Each side of the instrument, a wedge may be inserted, to regulate its elasticity, or by some other contrivance this object may be

secured. In scraping, the panicles must first be laid evenly together, and the stalks taken in the hand. If this is not done in the field, and bundles not formed, then must it be done with considerable labor at *the time* of scraping in the barn.

Product.—A common crop is seven hundred to eight hundred pounds per acre. There have been raised one thousand and eleven hundred pounds per acre, with eighty to one hundred bushels of seed. The large kind grows eleven feet high.

Value of the Crop.—About the year 1836 or 1837, the brush sold at 12 1-2 cents a pound; and one farmer in Northampton sold his crop standing, unharvested, at one hundred dollars per acre. Since then the price has been decreasing. This year it has been four and five cents. At six cents, the farmer, for eight hundred pounds, gets \$48 an acre, besides sixty or seventy bushels of seed, worth a third of a dollar a bushel; so that he receives \$70 or upward for an acre.

Good farmers regard the seed alone as equal to a crop of oats from the same land. Some land owners have rented their land for broomcorn, at \$25 per acre, they putting on five or six loads of manure.

One farmer, who, a few years ago, cultivated fifty acres in broomcorn, must have had an almost unequalled income for a New-England farmer.

Quantity.—In Northampton, probably, two hundred acres are raised; in Hatfield, three hundred; in Hadley, four hundred; in other towns, Whateley, Deerfield, Greenfield, Easthampton, Southampton, South Hadley, Springfield and Longmeadow, perhaps three hundred or four hundred more; in all, in the valley of the Connecticut, twelve hundred or thirteen hundred acres; the product, in brush and seed, worth \$1,000,000.

Manufacture of Brooms.—Individuals tie up brooms

with wire or twine. The expense is greater for materials and labor when wire is used.

The turned broom-handles cost, as delivered, only one dollar a hundred—one cent each. The expense of other materials and labor in making a broom is six cents, or on the whole about seven cents. In a good broom, a pound and a half of brush is employed, which at the present price of five cents, would be seven and a half cents, so that a broom made with wire costs now about fourteen and a half cents. Brooms are made with brush weighing three-quarters of a pound, one pound, one pound and a quarter, and one pound and a half. The brush is whitened by the manufacturer. It is placed in a large tight box, and bleached by the fumes of sulphur; but this process is said to weaken the brush.

Miscellaneous.—A few remarks will be added, some of which were omitted in their proper places. If the stalks are cut before the seed is ripe, they are better, stronger, more durable, than if cut after the seed is ripe. In this case, the farmer would lose the value of the seed. He of course will not submit to this loss, unless it is made up to him by the increased price of the brush.

The seed is used for feeding horses, cattle, and swine. It is ground and mixed with Indian meal, and is regarded as excellent food—it weighs forty pounds a bushel.

The brush, when it is put in the barn, should be placed on a scaffold, so as to be exposed to a circulation of the air, that it may dry, and not mould. For all the purposes of use, a broom made with twine is equal to one made with wire; and a man can make several more of them in a day.

A CHEAP PAINT.

Take one bushel of unslacked lime, and slack it with cold water; when slacked, add to it 20 lbs. of Spanish

whiting, 17 lbs. of salt, and 12 lbs. of sugar. Strain this mixture through a wire sieve, and it will be fit for use after reducing with cold water. This is intended for the outside of buildings, or where it is exposed to the weather. In order to give a good color, three coats are necessary on brick, and two on wood. It may be laid on with a brush similar to white wash. Each coat must have sufficient time to dry before the next is applied.

For painting inside walls, take as before one bushel of unslacked lime, 3 lbs. of sugar, 5 lbs. salt, and prepare as above, and apply with a brush.

I have used it on brick, and find it well calculated to preserve them—it is far preferable to oil paint. I have also used it on wood, and assure you, that it will last longer on rough siding, than oil paint will on planed siding or boards.

You can make any color you please. If you wish a straw-color, use yellow ochre, instead of whiting; for lemon-color ochre, and chrome yellow; for lead and slate-color, lampblack; for blue, indigo; for green, chrome green. These different kinds of paint will not cost more than one-fourth as much as oil paints, including labor of putting on.

PRESERVATIVE COMPOSITION.

For a composition for coloring and preserving gates, roofs, and timber generally, from the weather, melt twelve ounces of rosin in an iron pot or kettle; add three gallons of train oil, and three or four rolls of brimstone; when they are melted and become thin, add as much Spanish brown, (or red or yellow ochre, or any other color you like, ground as usual with oil,) as will give the whole the shade wanted. Then lay it on with a brush as hot and as thin as you can. Some days after the first coat is dried, lay on a second.

INCOMBUSTIBLE WASH.

Slack stone lime in a large tub or barrel with boiling water, covering the tub or barrel, to keep in all the steam. When thus slacked, pass six quarts of it through a fine sieve. It will then be in a state of fine flour. Now, to six quarts of this lime, add one quart of rock or Turk's Island salt, and one gallon of water; then boil the mixture and skim it clean. To every five gallons of this skimmed mixture, add one pound of alum, half a pound of copperas, by slow degrees add three-fourths of a pound of potash, and four quarts of fine sand or hickory ashes, sifted. We suppose any kind of good hard wood ashes will answer as well as hickory. This mixture will now admit of any coloring matter you please, and may be applied with a brush. It looks better than paint, and is as durable as slate. It will stop small leaks in the roof, prevent the moss from growing over and rotting the wood, and render it incombustible from sparks falling upon it. When laid upon brick work, it renders the brick impervious to rain or wet.

PRICE OF LARD, PORK, ETC., SHOWING THE VALUE OF SWINE TO THE FARMER.

It may not be unacceptable to the producer to learn the value of his commodity in the market of exportation.

A New-Orleans price current of January 7th, 1843, quotes lard at six and a quarter cents, and hams at seven cents. The question arises, what is pork worth to the farmer on the western waters, where the shipment to New-Orleans is estimated at seventy-five cents per barrel?

A fat hog, weighing three hundred pounds, will furnish two hams weighing, together, about forty-two pounds, leaving two hundred and fifty-eight pounds of pork. If

this is reduced to lard by the most expeditious and profitable manner, viz: by steaming, we may expect about sixty per cent. of lard, equal to 154.80 pounds, which, at six and a quarter cents, amounts to. \$10 67

Add forty-two pounds of ham at seven cents	\$2 94	
Deduct shrinking and curing.	94	
	<hr/>	2 00
		<hr/>
		12 67
Deduct keg or barrel.	75	
Also freight to New Orleans.	67	
Commissions and contingencies.	75	
	<hr/>	2 17
		<hr/>
		\$10 50

This gives \$3 50 per hundred for the hog as dressed.

FREIGHT TO EUROPE, ETC.

As shipments will be made to other parts of Europe besides England, the freight to Liverpool or Havre, from New-York and New-Orleans, or Boston, are given in the following table:

Price of articles in England: Lard, 38s. to 43s. per cwt. ;=to \$8 36 to \$9 36.

Cost of shipment or freight from Cleveland to Montreal, 47 1-2 cents per hundred.

Cost from Montreal to Liverpool, about 70 cents per hundred.

Cost to New-Orleans from Cincinnati, 75 to 87 cents per barrel.

From New-Orleans to New-York, 75 cents per barrel.

From Cleveland to New-York, 55 cents per hundred pounds.

From New-York to Liverpool, 33 cents per hundred pounds.

From Cleveland to Boston, 60 cents per hundred pounds.

From Boston to Liverpool, 37 1-2 cents per hundred.

From New-Orleans to Liverpool, 50 cents per hundred pounds.

EGGS; AN ARTICLE OF EXPORT

A method of preserving EGGS, by packing them in salt with the small end downward, and by which they have been kept perfectly good for eight or nine months, will, it is believed, enable the inhabitants of portions of our country where these abound, to make them profitable. Thousands of bushels may be sent off to the Atlantic markets. Great quantities are used in France; and as the duty on them in England is so low, (not two cents per dozen,) they might bear exportation. They have been gathered and sold at the West as low as ninety cents per bushel; which, as a bushel contains forty-five dozen, is but two cents per dozen.

PRICE OF WHEAT IN EUROPE.

It may be gratifying to some to compare the transportation of flour, etc, from Poland, (one of the greatest grain-growing districts,) and the United States, to England.

From Poland to Dantzic, the grain is chiefly brought from the interior in flatboats of the rudest construction, similar to those in use on the Western waters of the United States, at an expense of twenty-five cents per bushel, open to the weather, etc. During the voyage the wheat sprouts, and forms a thick mat or covering for the bulk. On reaching Dantzic, the boat is broken up and sold, the wheat taken out and dried in the fields, then stored in the warehouses at an expense of six cents per

bushel. From Dantzic to England, the freight, etc, not including the duty, is eight pence—equal to about fifteen cents per bushel; making in all about forty-six cents per bushel. From Illinois to Liverpool, the whole freight would be 14s. per quarter, or 1s. 9d.—equal to thirty-eight cents per bushel; being about eight cents in favor of Illinois. There are costs and charges also, in both cases, which would, probably, be in favor of our export.

In this connection, it may be interesting to compare a detailed estimate of the export of wheat from Illinois to England, both by New-Orleans and Canada.

ILLINOIS WHEAT, VIA NEW-ORLEANS TO LIVERPOOL.

Wheat, four and three-quarter bushels at 50 cents is.....	\$2 37
Grinding and barreling, (with offal).....	50
Freight to New-Orleans.....	62
Freight to Liverpool.....	66
	\$4 15

which is little less than ninety cents. Charges would be alike in both cases.

View the matter in another point of light. Suppose we carry our grain or flour through Canada, and pay, after the 5th of July, 3s. on an imperial quarter, viz: eight bushels, which is about eight one-third cents per bushel! Foreign wheat would have to pay, at the present sliding rule, sixty cents per bushel. Could they compete with us?

We therefore could succeed with the greatest competitor; but that competitor cannot supply one and a half million of bushels, less than the surplus of some of the smaller States of this Union produce; and, indeed, all Europe could not supply England with more than eighteen millions bushels, under the most favorable circumstances—about three-fourths as much as the State of Ohio now furnishes.

It may be remarked, too, that the crops on the continent are far more precarious than those of the United States; and hence the continental Governments find it necessary, and are careful to reserve large granaries, to guard against such a misfortune as a failure of the usual harvest. Exportation thence is also forbidden in certain cases, but in the United States no such prohibition exists.

While, therefore, we may look with confidence to advantages in our favor in the British market, we must remember that we have to compete against almost unpaid labor, and cannot expect a great profit on our culture, unless the very cheapest mode of production is studied. Labor (as we have before remarked,) must doubtless fall very considerably in agricultural districts, or else farmers and planters cannot hire.

TO PREVENT SMUT IN WHEAT.

On the 2nd of April, 1742, I prepared, says a sensible writer, eight bushels of wheat for seed, as follows: A brine was made strong enough to bear up an egg, and in quantity sufficient to wash a bushel at once. The wheat was put into the brine, and everything that would swim skimmed off and thrown away. It was then taken out, and a sufficient quantity of lime sifted on to it to make it dry. It was allowed to remain in this state in a box until the 6th, by which time some of it had begun to sprout, when it was sown. On the night of the 6th it began to rain, and continued to rain all the next day, and the birds were so thick upon the wheat that I feared I should be obliged to sow it over; consequently I dragged it in while it was raining on the 7th. The ground was very wet in consequence of the water that had fallen since the wheat was sown, and some of my neighbors prophesied that I would have a large crop of smut, saying that smut was

caused by putting in wheat in wet weather. The wheat being harvested and thrashed, the product was one hundred and thirty-five bushels that was saved, considerable being lost by thrashing on the ground. The seed was very foul and smutty—the product was perfectly free from smut and other foul stuff, and of a superior quality. Part of the ground had wheat on the year before, and a part corn. The number of bushels is not mentioned as being a great yield. One of my neighbors, from whom I obtained the seed, sowed the same kind without any preparation, on the 5th of the same month, the product of which was very smutty, and otherwise foul.

TABLE.

A box 24 inches by 16 inches square, and 28 inches deep, will contain a barrel, or 10, 752 cubic inches.

A box 24 inches, by 16 inches square, 14 inches deep, will contain a half barrel, 5,376 cubic inches.

A box 16 inches by 16 8-10 inches square, and 8 inches deep, will contain a bushel, or 2,150 4-10, cubic inches.

A box 12 inches by 11 2-10 inches square, and 8 inches deep, will contain a half-bushel, or 1,075 2-10 cubic inches.

A box 8 inches by 8 4-10 inches square, and 8 inches deep, will contain one peck, or 537 7-10 cubic inches.

A box 8 inches by 8 inches square, and 4 2-10 inches deep, will contain one half-peck, or 286 8-10 cubic inches.

A box 7 inches by 4 inches square, and 4 8-10 inches deep, will contain half a gallon, 134 4-10 cubic inches.

A box 4 inches by 4 inches square, and 4 2-10 inches deep, will contain one quart, 67 2-210 cubic inches.

These measures all come within a small fraction of a cubic inch of being perfectly accurate, as near, indeed, as any measures of capacity have ever yet been made for common use ; the difficulty of making them with absolute exactness, has never yet been overcome.

MEASURING CORN.

The following rule for ascertaining the quantity of shelled corn in a house of any dimensions, is by William Murray, Esq. of South Carolina, and was read before the St. John's Collection Agricultural Society, and communicated by them for publication in the Southern Agriculturist.

Rule.—Having previously levelled the corn in the house, so that it will be of equal depth throughout, ascertaining the length, and breadth, and depth of the bulk ; multiply these dimensions together, and their products by four, then cut off one figure from the right of this last product. This will give so many bushels and a decimal of a bushel of shelled corn. If it be required to find the quantity of eared corn, substitute eight for four, and cut off one figure as before.

Example.—In a bulk of corn in the ear, measuring 12 feet long, 11 feet broad, and 6 feet deep, there will be 316 bushels and eight-tenths of a bushel of shelled corn, or 633 bushels and six-tenths of ear corn, as :

12	12
11	11
<hr style="width: 100%;"/>	<hr style="width: 100%;"/>
132	132
6	6
<hr style="width: 100%;"/>	<hr style="width: 100%;"/>
792	792
4	8
<hr style="width: 100%;"/>	<hr style="width: 100%;"/>
316,8	633,6

The decimal 4 is used when the object is to find the quantity in shelled corn, because that decimal is half of the decimal 8, and it requires two bushels of ear corn to make one of shelled corn. In using these rules, a half a bushel may be added for every hundred; that amount of ears results from the substitution of the decimals.

The term, "*barrel of corn,*" so much used by Southerners, means five bushels of shelled corn.

TO CURE SHEEP SKINS WITH THE WOOL ON.

Take a spoonful of alum and two of saltpetre; pulverize and mix well together, then sprinkle the powder on the flesh side of the skin, and lay the two flesh sides together, leaving the wool outside. Then fold up the skin as tight as you can, and hang it in a dry place. In two or three days, as soon as it is dry, take it down and scrape it with a blunt knife, till clean and supple. This completes the process, and makes you a most excellent saddle cover. If, when you kill your mutton, you treat the skins this way, you can get more for them from the saddler, than you can get for the wool and skin separately disposed of otherwise.

Other skins which you desire to cure with the fur or hair on, may be treated in the same way.

DESTRUCTION OF WEEDS.

There are few things more essential to the farmer than having a good wheat crop. He gets a better price for his grain, and what is quite as much, he has no fears from injury in using such pure wheat for seed. Weeding wheat, therefore, is not to be neglected. In a wheat field, everything that is not wheat is a weed, and should be pulled out at once. Remember that a rank thrifty weed, chess, cockle, stemkrou, etc., draws sufficient nutriment from the crop to sustain a handful of good ears of wheat, and

which belong to them. Thorough summer fallowing is the best eradicator of weeds ; but if any escape and spring up, they should be carefully gathered and destroyed before the seed ripens.

Let no weed ripen its seed on your farm, if it can be prevented. The thistle, johnswort, and similar pests, are left so long in many cases before they are cut, that they mature their seeds, and these do as much mischief as if allowed to stand and ripen, while the labor of cutting them is nearly lost. The best way to treat them is to rake and burn them as soon as dry. This destroys their power of mischief effectually. It is very bad policy to put weeds, whether cut with your hay or grain, into your barn, as the manure of the yard will be filled with seeds, ready to spring up whenever and wherever it is applied to the soil. There are thousands of farms in this country, the productive value of which, both in grain and grass, is lessened full twenty-five per cent. in consequence of the vile weeds with which they are infested. Sowing spring grains, such as spring wheat, barley, or oats, has had a bad effect in extending the growth of weeds, and in many places the system must give way to summer fallowing, or cropping will be impossible.

FATTENING ANIMALS.

There are some rules which may be advantageously adopted in feeding animals, which, however obvious they may be, are too often passed over, or neglected. Some of these will be specified ; and

1st. *The preparation of Food.*—This should be so prepared, that its nutritive properties may be all made available to the use of the animal, and not only so, but appropriated by the least possible expenditure of muscular energy. The ox that is obliged to wander over an acre to get the food he should find on two or three square rods ;

the horse that is two or three hours eating the coarse food he would swallow in fifteen minutes, if the grain was ground, or the hay cut as it should be; the sheep that spends hours in making its way into a turnip, when, if it was sliced, it would eat it in as many minutes; the pig that eats raw potatoes, or whole corn, when either cooked could be eaten in one quarter of the time now used, may indeed fatten, but much less rapidly than if their food was given them in a proper manner. All food should be given to fattening animals in such a state, that as little time and labor as possible, on the part of the animal, shall be required in eating.

2nd. *The food should be in abundance.*—From the time the fattening process commences, until the animal is slaughtered, he should never be without food. Health and appetite are best promoted by change of food, rather than by limiting the quantity. The animal that is stuffed and starved by turns, may have streaked meat, but it will be made too slowly for the pleasure or profit of the good farmer.

3rd. *The food should be given regularly.*—This is one of the most essential points in feeding animals. If given irregularly, the animal indeed consumes his food, but he soon acquires a restless disposition, is disturbed at every appearance of his feeder, and is never in that quiet state so necessary to the taking on of fat. It is surprising how readily any animal acquires habits of regularity in feeding, and how soon the influence of this is felt in the improvement of his condition. When at the regular hour the pig has had his pudding, or the sheep his turnips, they compose themselves to rest, with the consciousness that their digestion is not to be unseasonably disturbed, or their quiet broken by unwonted invitation to eat.

4th. *The animal should not be needlessly intruded upon between the hours of feeding.*—All creatures fatten much

faster in the dark than in the light, a fact only to be accounted for by their great quiet. Some of those creatures that are the most irritable and impatient of restraint while feeding, such as turkeys and geese, are found to take on fat rapidly when confined in dark rooms, and fed at stated hours by hand. There is no surer proof that a pig is doing well, than to see him eat his meal quickly and then retire to his bed, to sleep or cogitate until the hour of feeding returns. Animals while fattening should never be alarmed, never rapidly driven, never be fed at unseasonable hours, and, above all things, never be allowed to want for food.

OPODELDOC, OR CAMPHORATED SOAP LINIMENT.

Take common white soap, three ounces; camphor, one ounce; oil of rosemary, oil of origanum, of each one-third ounce; alcohol, one pint; cut the soap fine, and, with a gentle heat, dissolve it in the alcohol in which the other articles had been previously dissolved. Pour into wide-mouthed vials or jars to cool.

If LIQUID OPODELDOC is preferred, take two ounces of Castile soap, in place of three ounces of common soap. Troy ounces are designated. If not practicable to have the articles weighed by that standard, bear in mind that the Troy ounce is nearly equal to 1.19 ounce Avoirdupois.

Opodelloc, made according to the above recipes, is altogether superior to that usually sold in vials at exorbitant prices.

BRITISH OIL.—Take spirits of turpentine and linseed oil, of each half a pint; oil of amber, oil of juniper, and mineral tar, of each one gill.

OIL OF SPIKE, or a mixture commonly sold under that name, is nothing but spirits of turpentine, mineral tar, and some essential oil, added in various proportions. The

following is a good recipe for its preparation: Take spirits of turpentine, one pint; mineral tar, half a pint; oil of amber, three ounces; oil of rosemary, one ounce.

ITEMS IN DOMESTIC ECONOMY.

Use spirits of turpentine to remove grease spots from clothes. It dissolves the grease, and then soap the more easily removes it. Grease may be removed from undyed woollen by a solution of pearlsh.

Lime spots on woollen may be completely removed by strong vinegar. The vinegar effectually neutralizes the lime, but does not generally affect the color of the cloth. Dark cloth, the color of which has been completely destroyed in spots six inches square, has thus had its original color completely restored.

The whiteness of ivory-handled knives may be restored by rubbing them with fine sand-paper or emery.

The oftener carpets are shaken, the longer they last, as the particles of sand which collect upon them grind the threads. Sweeping them also wears them.

Dry wood will produce, on a moderate estimate, twice as much heat as the amount of green wood; and saves much trouble in kindling fires on cold mornings. To prevent its burning away too rapidly, the sticks should be large. To suppose that green wood would actually cause more heat in burning than dry, is as absurd as to suppose that a vessel of hot water will freeze sooner than a cold one.

FOREIGN MONEYS,

WITH THEIR VALUES, AS ESTABLISHED AT THE CUSTOM HOUSE, BY LAW.

	Dollars.
Aux Cayes, 8½ livres are equal to - - - - -	1.00
Blue or current dollar of Denmark, according to the exchange of London.	
Cayenne, 8 livres 5 sols of, are equal to - - - - -	1.00

	Dollars.
Ducat of Naples	.80
Franc of France	.18½
Florin of Trieste	.48
Genoa, 6¼ livres are taken as	1.00
Guadaloupe, 8 livres and 5 sols	1.00
Guilder of Antwerp	.40
“ Crefelt	.40
“ Frankfort, and others of the 24 florin rate	.40
“ Holland	.40
“ Nuremburg	.40
“ St. Gall	0.40 36-100
“ Trieste	.48
“ United Netherlands	.40
Live of France	.18½
“ Geneva	.29
“ Genoa, 6¼ livres	1.00
“ Leghorn, 6½ livres	1.00
Louis d'or rixdollar	.77
Marc Banco of Hamburg	.33½
Milrea of Brazil, according to rate of exchange.	
Milrea of Madeira	1.00
“ Portugal	1.24
Ounce of Sicily	2.46
Pezza of Leghorn	0.90 76-100
Piastre of Turkey, according to rate of exchange in London.	
Pound sterling of England, Scotland, and Ireland	4.80
“ Antigua	2.22
“ Barbadoes	3.20
“ Bermuda	3.00
“ Halifax	4.00
“ Jamaica	3.00
“ New Providence	2.50
Rial plate of Spain	.10
Velon of Spain	.05
Rix-dollar of Bremen	.77
“ Denmark	1.00
“ Berlin, current	0.68 29-100
“ Hamburg	1.00
“ Prussia	.68 29-100
“ Saxony	.69

	Dollars.
Rix-dollar of Sweden - - - - -	1.00
Ruble of Russia, according to the exchange between London and St. Petersburg.	
Rupee of Bombay, Calcutta, and Sicca, each - - - - -	.50
“ Madras, 103=100 Sicca rupees	
Star pagoda of India - - - - -	1.84
St. Bartholomew's, 8s. 3d. - - - - -	1.00
St. Kitt's, 9s. - - - - -	1.00
Tale of China - - - - -	1.48

In Canada, money is reckoned in Halifax currency, a pound Halifax being 16s. 8d. sterling; thus making £100 sterling, £120 currency.

The legal value of a British sovereign in Canada, is 24s. 4d. Halifax. It usually passes in trade at about two pence currency, higher.

RATES OF POSTAGE.

ABSTRACT OF THE POST OFFICE LAW, PASSED MARCH 3, 1849.

	Cents.
LETTERS, not over half an ounce, not exceeding 300 miles,	5
“ “ “ “ exceeding 300 miles,	10
“ over half an ounce, and not over an ounce, double price.	
Any fractional excess over an ounce, always counted an ounce.	
SHIP LETTERS, delivered where received,	6
“ if conveyed by mail, in addition to the postage,	2
“ deposited in a post office for ship,	1
HANDBILLS, CIRCULARS, and ADVERTISEMENTS, not exceeding one sheet, unsealed, any distance, (to be prepaid,)	3
NEWSPAPERS, sent from office of publication, not exceeding 1900 sq. inches, under 100 miles, or within the State,	1
“ over 100 miles, and out of the State,	1½
“ over 1900 square inches, same rate as pamphlets.	
“ Transient papers, the same rates, to be prepaid.	
PAMPHLETS, of all kinds, not exceeding one ounce a copy,	2½
“ for each additional ounce,	1
“ A fractional excess, if less than a half ounce, is not counted; if a half ounce or more, it is counted an ounce.	

FOREIGN AND SEA POSTAGE.

	Cents.
LETTERS for the U. States' territories on the Pacific, a single half ounce or less, (prepaid or not,)	40
“ for Havana, (to be prepaid,)	12½
“ for Chagres, “ “	20
“ for Panama, “ “	30
“ from any post office in the United States, to or from G. Britain or Ireland, by American or English steamers, for a single half ounce or less, (prepaid or not,)	24
“ for Bremen, by American steamers, a half ounce or less, (prepaid or not—the usual inland postage to be added,)	24
“ for other foreign countries, if sent by British steamers, U. S. inland postage, any distance, on a half ounce,	5
“ An ounce, of course, will be double, (to be prepaid,) or if sent by American steamers, to go through the British mail, the whole postage, from any U. S. post office, for a single half ounce, (to be prepaid,) is	21
“ for France, Spain, Holland, and the Netherlands, if sent by American steamers, must be prepaid.	
NEWSPAPERS, sea-postage, besides inland, both prepaid,	3
“ from any U. S. post office, to or from Great Britain or Ireland, both prepaid,	2

BLUE GRASS.

Blue grass will grow upon any of the soils of Illinois, but it delights in a moist situation. Hence swails, level or wet prairie, bottom-land and barrens, are best adapted to its cultivation. It suffers in the heat of summer upon the rolling prairie, unless mixed with clover, which, by its broad leaves, protects the roots of blue grass from the rays of the sun, or unless it is suffered to grow unmolested, in which case it protects itself. Close feeding in the summer will keep it short and stunted, until the fall rains set in.

Sowing.—The seed ripens the 1st of July. Hence any time after that, until October, will answer for sowing. It is better that it should get a start in the fall, as it does better the succeeding season. It will not generally make

a sward for itself in less than two years ; hence it should be sown with other grasses, such as timothy or clover, or both. Were I to set ten acres in blue grass, I should pursue the following method. Prepare the ground for wheat and make it smooth ; take 1 peck of timothy, 4 quarts of clover, and 4 quarts of blue grass seed, and mix them ; sow one peck of the mixture about the 1st of September, or later. If sowed without fall grain, and the season be at all favorable, a fine crop of timothy and clover may be cut the succeeding summer. Some prefer to omit the clover until spring ; in which case it escapes danger from the winter. The blue grass will hardly show itself the first season, and those unacquainted with it will be apt to suppose that their seed was bad, or that it had not come up. The second season, I would pasture it with cattle or horses. This mode will have a tendency to kill out the clover and timothy, and in the fall of that season the blue grass will show itself. The *teatha* (as the English call it,) of cattle, seems to be necessary to bring them forth thriftily, or it may be that the *mere tramping* the ground has a beneficial effect upon it.

Seed.—What is called stripped seed, is the kind commonly found in market. Some sell what is commonly called *cleaned* seed, but it has all the chaff in it, and is only separated from the seed stems. The stripped seed is preferred, as its elasticity prevents its suffering with dampness, as the clean seed sometimes does. Great care is requisite in obtaining the seed, as it frequently loses its vital qualities by storage in damp warehouses. Before using the stripped seed, rub it through a common wire meal sieve. This comminuates it, and permits its distribution among other seeds with which you sow it.

Blue grass will grow on the unbroken prairie, but will not show itself until the prairie grass has been killed out by pasturing. I presume in point of fact, that blue grass

sowed at any season of the year, in any manner, and upon any kind of soil, will grow and flourish, sooner or later, according to circumstances. Tramping the ground at intervals is of prime necessity to bring it out, as far as my observation extends. Blue grass spreads very rapidly *by its roots*, as well as by the annual seed.

Blue grass pastures, as well as others, will become what is called *hide-bound*, in the course of years. In such a case, a sharp harrow, well loaded and dragged over it, so as to tear the sod materially, or a scarifier which should cut two or three inches in depth, will produce the best effects. In truth, all our grasses are as much improved by *cultivation*, in frequently tearing the roots, as any of our grains or vegetables. The best time for the operation is late in the fall; but the spring will answer, if done early.

From the Union Agriculturist

BREAKING PRAIRIE.

MR. SECRETARY :

I had long since intended to have redeemed my promise, to communicate to you such observations as may have occurred to me in my agricultural pursuits, and may be deemed interesting or useful to the farming community; but circumstances have hitherto prevented me.

Prairie Farming, its difficulties.—When I commenced making a farm on the prairie, I found myself engaged in a task by no means without its difficulties and perplexities. Whatever I had learned of farming at the East, had to be principally learned over again here. It is true, that making fences, erecting buildings, etc., are matters of not so much difficulty, nor is there anything very peculiar in the process here; but it is in *opening* the farm, in cultivating the soil, and in the whole process of raising the crop, that Western experience is wanted. I looked

in vain for the result of well tested and enlightened experiments ; and I sensibly—deeply felt, the want of just such a journal as I hope your paper will prove. It is true, I found myself surrounded by a class of enlightened, intelligent, industrious and prosperous farmers, of whom I embraced every opportunity to learn what I might of my new business ; nor did I experience any want of kindness on their part to inform me. What was the result ?

Breaking Prairie.—Of course among the first objects, was to get some prairie broken ; and to that subject were my inquiries directed. What was the season of the year in which to break prairie ? How deep should it be broken ? With what team could it be most profitably done, taking into the account the expense and quality of the work ? In answer to all these questions, I received answers differing very widely from each other, from men of perhaps equal experience and intelligence. In reply to the first inquiry, some said, commence breaking as soon as the ground is sufficiently dry in the spring, but be sure that you stop the plough by the first of July. Others assured me, that no consideration should induce me to break except in the month of June ; while others recommended July as well as June ; and many assured me that breaking might profitably be continued till September, should circumstances permit. An equal contrariety of opinion was observed in answer to the other inquiries. What was to be done amid such a variety of opinion—such a multitude of contradictory advice ? Yet, even here, I found safety in a multitude of counsel. I pursued my inquiries, and ascertained the reason assigned by each for the opinion which he gave, and found that each conclusion was deduced from a reasonable cause ; but without going into the particular experience of each one, I will state briefly the conclusions to which I have arrived from

my own experience and observation, assisted by what I have been able to learn from others.

For a Spring Crop.—If it be intended to raise a spring crop the first year, and especially corn, it is advisable to start the plough as soon as the grass has started sufficiently to afford a *good bite*. By this time, in ordinary seasons, the ground will be sufficiently dry, and the plough may be kept going as late as it will do to put in the crop. The crop will be found to be best on the land first broken; but the best year, it will be found that the land last broken is in much the best condition.

For a Fall Crop.—If a fall crop is intended, the breaking should not commence till about the first of June, and may be continued till the middle of August; and in very dry seasons, perhaps a month later. It will almost invariably be found, that the land first broken will afford the best crop, and nearly twice the quantity may be expected from land broken in June, that will be realized from land broken in September; so that it will be readily perceived, if the time can be otherwise profitably employed, it is not advisable to continue breaking so late as that time.

Crop on the Sod.—If it is proposed to raise a spring or fall crop on the sod, the prairie should, by all means, be broken as deep as possible, say from four to five inches at least. All who have had any experience in prairie farming, are well aware that the sward is composed of a strong tenacious mass of grass roots, firmly interwoven together, near the surface of which there is, comparatively, but very little earthy substance to be found, and that little so firmly compressed and bound up, that it can afford but very little nourishment to the growing crop. Hence the necessity of ploughing deep, in order to obtain sufficient mould to sustain the crop, will be readily perceived. It

is true, that it requires a very considerable more force to break deep than it does to break shallow ; perhaps more than would be at first imagined ; but then you are compensated for that, by the greater ease and facility with which the land is ploughed the second time ; because if the land is broken shallow, it is necessary to go below the first breaking, when you cross-plough or split the furrows, (which is perhaps the better practice,) and hence you are compelled to cut off all of the old roots again, while they are yet sufficiently strong to afford considerable resistance.

If no crop is intended to be grown the first year upon the piece broken, the team should not be started till about the first of June ; nor if practicable should it be continued longer than about six weeks. And I believe it is universally admitted, that land broken in June decays much faster, and a better crop may be observed, even for several years, than on land broken much earlier or later. The two principal reasons for this are, that the grass is at this time growing with full vigor, and the land is then as dry as at any other season of the year. It must be borne in mind, however, that these observations will only apply to our ordinary seasons ; for it sometimes happens that June is a very wet month, as in 1833, when, I am informed that land broken in August, which was a dry month, proved better than that broken in June.

COST OF A PRAIRIE FARM.

The first cost of the land is \$1,25 an acre. The first ploughing we generally count as cost, though erroneously. This is worth \$1,50 an acre ; or to be better understood, I will say differently. Prairie land is abundant at government price ; but timber is mostly in second hands and is held higher.

A quarter section of prairie land, that is, one hundred and sixty acres, at \$1,25; is.....	\$200
Timber, say 40 acres, which is more than enough, at \$3,	120
Breaking up the prairie, at 1,50.....	240
Fencing into four lots, eight rails high and stakes, 960 rods, or three miles, 15,366 rails at one cent, \$153,53 ; 3,840 stakes, at $\frac{1}{2}$ cent, \$19,20	173
A good comfortable double log cabin, such as first sttlers generally occupy.....	50
Other small buildings and temporary sheds.....	50
Average cost of a well with pump, \$30, with buckets, \$15.....	15
I will add to cover contingencies, such as half an acre of land well paled in for a garden, a cow-yard, hog-pen, and other fixings.....	72
<hr/>	
This makes the cost of the farm, independent of the wood land, just \$5 an acre—the total.....	\$920

HYDROPHOBIA—OR, MADNESS AND ITS REMEDIES.

JOHN WESLEY'S REMEDY FOR THE BITE OF MAD DOGS.

First. Plunge into cold water daily for twenty days ; keep under as long as possible. This has cured, even after the hydrophobia had begun.

Second. Or mix the ashes of trefoil, or oak ashes, with hog's lard, and annoint the part bitten as soon as possible ; repeat twice or thrice, at six hours' intermission. This has cured many in England, and in one instance particularly, a dog bitten on the nose by a mad dog.

Third. Or mix a pound of salt with a quart of water ; squeeze, bathe, and wash the wound with this brine for one hour ; then bind some fine salt on the wound for twelve hours. The author of this recipe was bitten six times by rabid or mad dogs, and each time cured himself by this simple remedy. The above is an extract from John Wesley's book of recipes for the poor of England.

HYDROPHOBIA, OR CANINE MADNESS, CURED.

The following remedy (says a certain author) has been successfully used by the sporting gentry in Ireland, whose hounds sometimes get in a rabid state. The experiment was made soon after a dog had bitten a number of his comrades. All the dogs bitten but one had the remedy administered, and showed no signs of madness. But the one which did not take the remedy, died in a rabid state. This was a fair experiment.

AN INTERNAL REMEDY FOR HYDROPHOBIA.

Take six ounces filings of pewter; six ounces rue, the herb, pulverized; four ounces garlic; four ounces mithridate, or venice treacle; cut the rue and garlic fine or small, mix the whole in three quarts of strong beer, put the same articles in a vessel that can be stopped tight; put it into a pot of cold water. If the vessel containing the ingredients be of glass, wind a rope of hay round it to prevent its breaking when boiling. Let it simmer for three or four hours over a slow fire. Then take the inside vessel out of the pot of water, and pour out the contents, and strain and press, or squeeze the strength out of the herbs, and bottle the liquid for use—cork it well. Dose: For a dog, one table-spoonful the first day; two the second day; three the third day; four the fourth day; and five the fifth day. Then, for four days more, give five table-spoonsful for a dose each day, making nine days in all. The same remedy to be taken, and in the same way, by man, woman, or child. Children take the remedy in proportion, under twelve years of age. To be taken in the morning. The sooner the remedy is applied after the bite the better. Poultice the wound with the warm ingredients, squeezing the wound. This has the appearance of a valuable remedy. Try it.

And yet another valuable remedy for hydrophobia, the bite of rattlesnakes, chunk-head, or pilo snake, spider, etc. Take a white onion, cut it across the grain into four equal parts; sprinkle fine salt on the onion, and apply it by bandages to the wound as soon as possible after being bitten by dog, snake, or spider, and the poison will run up into the onion; repeat every half hour with a new piece, or until there is no discoloring of poison in the onion, and the poison extracted. Then a healing plaster may be used, and the wound healed.

TO MEASURE CATTLE.

In ascertaining the weight by admeasurement, the girth is taken by passing a cord just behind the shoulder-blade and under the fore-legs: this gives the circumference, and the length is taken along the back from the foremost corner of the blade-bone of the shoulder, in a straight line to the hindmost point of the rump. (See engraving below.)

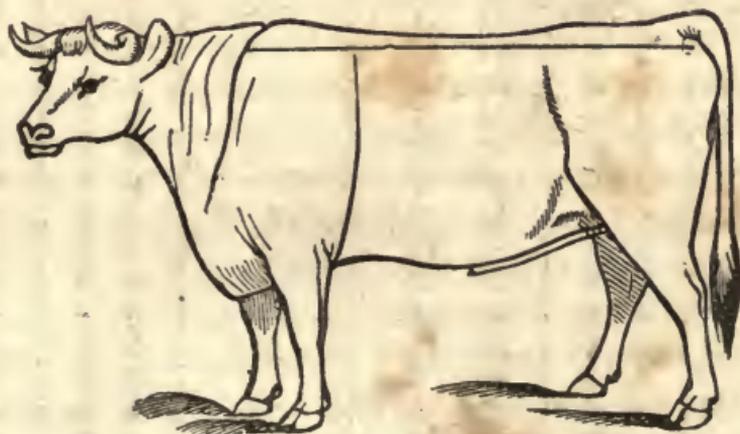


TABLE FOR ADMEASUREMENT OF CATTLE.

Girth.		Length.		Weight.		Girth.		Length.		Weight.	
ft.	in.	ft.	in.	st.	lbs.	ft.	in.	ft.	in.	st.	lbs.
4	3	3	0	12	12	5	9	3	9	29	7
		3	3	13	13			4	0	31	6
		3	6	15	0			4	3	33	6
		3	9	16	1			4	6	35	5
		4	0	17	2			4	9	37	5
4	6	3	0	14	6			5	0	39	5
		3	3	15	9			5	3	41	4
		3	6	16	12			5	6	43	4
		3	9	18	1	6	0	4	3	36	6
		4	0	19	4			4	6	38	8
		4	3	20	6			4	9	40	10
4	9	3	3	17	6			5	0	42	12
		3	6	18	11			5	3	45	0
		3	9	20	2			5	9	47	2
		4	0	21	6			5	9	49	4
		4	3	22	11			6	0	51	8
		4	6	24	2	6	3	4	6	41	11
		4	9	25	7			4	9	44	2
5	0	3	3	19	5			5	0	46	7
		3	6	20	12			5	3	48	11
		3	9	22	7			5	6	51	2
		4	0	23	12			5	9	53	6
		4	3	25	5			6	0	55	11
		4	6	26	13			6	3	58	2
		4	9	28	6	6	6	4	6	45	3
		5	0	30	0			4	9	47	10
5	3	3	3	21	4			5	0	50	4
		3	6	22	13			5	3	52	11
		3	9	24	8			5	6	55	4
		4	0	26	3			5	9	57	11
		4	3	27	12			6	0	60	4
		4	6	29	7			6	3	63	0
		4	9	31	2	6	9	4	6	48	11
		5	0	32	11			4	9	51	7
5	6	3	6	25	2			5	0	54	3
		3	9	27	0			5	3	56	13
		4	0	28	11			5	6	59	9
		4	3	30	8			5	9	62	6
		4	6	32	5			6	0	65	1
		4	9	34	2			6	3	67	11
		5	0	36	0	7	0	4	9	55	6
		5	3	37	11			5	0	58	4

ABLE FOR ADMEASUREMENT OF CATTLE.

Girth.		Length.		Weight.		Girth.		Length.		Weight.	
ft.	in.	ft.	in.	st.	lbs.	ft.	in.	ft.	in.	st.	lbs.
		5	3	61	3			5	6	78	9
		5	6	64	2			5	9	82	3
		5	9	67	1			6	0	85	11
		6	0	69	13			6	3	89	5
		6	3	72	12			6	6	92	13
		6	6	75	11			6	9	96	7
7	3	4	9	59	6			7	0	100	0
		5	0	62	8	8	0	5	3	80	0
		5	3	65	9			5	6	83	11
		5	6	68	11			5	9	87	8
		5	9	71	13			6	0	91	6
		6	0	75	1			6	3	95	3
		6	3	78	3			6	6	99	0
		6	6	81	4			6	9	102	12
7	6	5	0	66	13			7	0	106	9
		5	3	70	4	8	3	5	6	89	1
		5	6	73	9			5	9	93	2
		5	9	77	0			6	0	97	3
		6	0	80	5			6	3	101	3
		6	3	83	9			6	6	105	4
		6	6	87	0			6	9	109	5
		6	9	90	5			7	0	113	6
7	9	5	0	71	7			7	3	117	6
		5	3	75	1						

QUANTITY OF MEAL OF DIFFERENT GRAINS.

The corn of the different species of grain produces, when ripe, nearly the following quantities of meal, or household flour and bread per bushel; viz:

Wheat if weighing 60 lbs., of flour 48 lbs., of bread 64 lbs.

Rye,..... 54: 42 56

Barley,..... 48 37½ 50

Oats,..... 40 22½ 30

The flour of wheat, which is cut before it is quite ripe, is whiter than that which is allowed to come to maturity, and bears a higher price in the markets. The grain

which is intended for the miller should, therefore, be reaped before it has reached its utmost growth ; but that which is meant for seed should be allowed to stand until the last moment at which it can be cut with safety. The corn is ground into meal of various degrees of fineness, and a bushel of sixty pounds generally yields, when dressed, about the following quantities : viz.

Fine flour,.....	25½ lbs.
Household flour,.....	22½
Pollards,.....	8
Bran,.....	3

TABLE

SHOWING THE AVERAGE QUANTITY OF NUTRITIVE MATTER IN ONE THOUSAND PARTS OF SEVERAL VARIETIES OF ANIMAL FOOD.

Beans,.....	510	Veal,.....	250
Mutton,.....	290	Pork,.....	240
Beef,.....	260	Blood,.....	215
Chicken,.....	270	Cod and sole,.....	210
Brain,.....	200	White of an egg,....	140
Haddock,.....	180	Milk,.....	72

In bread, every hundred pounds' weight is found to contain eighty pounds of nutritious matter. Butchers' meat, averaging the various sorts, contain only thirty-five pounds in a hundred. French beans (in the grain,) ninety-two pounds in a hundred ; broad beans, eighty-nine ; peas, ninety-three ; lentilles, ninety-four in a hundred. Greens and turnips, which are the most acqueous of all vegetables used for domestic purposes, furnish only eight pounds of solid nutritious substance in a hundred. Carrots fourteen pounds ; and what is very remarkable, as being in opposition to the hitherto acknowledged theory, one hundred pounds of potatoes only yield twenty-five pounds of substance valuable as nutritious. One pound of good bread is equal to two pounds and a half or three pounds of the best potatoes ; and seventy-five

pounds of bread and thirty pounds of meat are equal to three hundred pounds of potatoes; or, to go more into detail, three-quarters of a pound of bread and five ounces of meat are equal to three pounds of potatoes. One pound of potatoes is equal to four pounds of cabbage, and three pounds of turnips; but one pound of rice, broad beans, or French beans (in grain,) is equal to three pounds of potatoes.

In the esculant roots, such as carrots, etc., but especially turnips, sugar is the leading nutritive matter; and the common fruits contain sugar, gum, albuminous matter, and acids, together with a highly attenuated form of woody fibre or lignin, which in that state is probably digestible. The comparative nutritive properties of the most common fruits will be seen by a reference to the annexed table.

TABLE

SHOWING THE AVERAGE QUANTITY OF NUTRITIVE MATTER IN ONE THOUSAND PARTS OF SEVERAL VARIETIES OF VEGETABLE FOOD.

Morels,.....	896	Peaches,.....	200
Almonds,.....	650	Gooseberries,.....	190
Tamarinds,.....	340	Apples,.....	170
Plums,.....	290	Pears,.....	160
Grapes,.....	270	Strawberries,.....	100
Apricots,.....	260	Melon,.....	30
Cherries,.....	250		

ON FATTENING ANIMALS.

There is a very great difference in the quantity of food which animals require, and in the time which they can pass without it. In general, those animals which are the most active require most, and those which are most indolent require least food. The cause of this is pretty obvious; the bodies of animals do not remain stationary, they are constantly wasting, and the waste is proportioned to

the activity of the animal ; hence the body must receive, from time to time, new supplies in place of what has been carried off. The use of food answers this purpose. Almost all the inferior animals have particular substances on which they feed exclusively. Some are herbivorous, some are granivorous, and others, again, are carnivorous.

From various experiments, we have the following result :

A horse will consume as much food, besides corn as	8	sheep.
A cow,.....	12	"
A fattening ox,.....	10	"
A three year old heifer,.....	8	"
A two year old heifer,.....	6	"
A one year old heifer,.....	4	"
A calf,.....	2	"

BREAD MADE FROM THE MIXTURES OF VARIOUS GRAINS.

Cakes may be made of potatoe flour, without mixing with any other, as follows : Its adhesive quality does not admit of baking or kneading unmixed with meal or wheaten flour ; but it may be managed in this manner. A small wooden frame, nearly square, is laid on a flat pan like a frying-pan ; this frame is grooved, and so constructed that, by means of a presser or lid introduced into the groove, the cake is at once fashioned according to the dimensions of the mould. The frame containing the farina may be almost immediately withdrawn after the mould is formed upon the pan, because, from the consistency imparted to the incipient cake by the heat, it will speedily admit of being safely handled. It must not, however, be fired too hastily, otherwise it is apt to become unpleasantly hard, and unfit for mastication. This precautionary measure being observed, it will be found that, when tho-

roughly ready, the bread of potatoe flour, even unaided by any foreign ingredient, will eat very palatably. It might then, from time to time, be soaked for puddings, like the tapioca; or it might be used like the capada cake, which, in appearance, it so much resembles; that is, when well buttered and toasted, it will make an excellent breakfast appendage. It is to be observed here, that this potatoe bread is not fermented.

Potatoes may be prepared to serve the purpose of bread, by simply boiling and cutting them into thin slices, which are dried thoroughly by a gentle and equal heat; for which purpose steam heat answers best. They may be close packed, and carried to any distance, or preserved for any length of time.

M. Parmentier observes, that potatoes contain too much mucilage in proportion to their starch, which prevents them from being converted into good bread; but that if starch be collected from ten pounds of raw potatoes, by grating them in cold water, and agitating them, and the starch thus produced be mixed with other ten pounds of boiled potatoes, and properly subjected to fermentation, like wheat flour, it will make good bread.

Potatoe Flour.—Sir G. Mackenzie, in the “Transactions of the Highland Society,” observes that potatoe flour, boiled with milk and a little sugar, forms one of the most palatable, wholesome, and cheap dishes of which a laboring man can partake, and cannot be too strongly recommended to cottagers, who ought always to convert a portion of their potatoe crop into flour, to be used when fresh potatoes cannot be got. In fact, it is potatoe starch that very nearly resembles arrow-root, though inferior, and at all events would be a very desirable thing to have in a cottager's family, as a light nourishing food in case of sickness.

ON FUEL.

In England, coal, from its abundance and cheapness, is the commonly employed fuel; but where wood is abundant, or where its value is little more than that of felling it, it is used either in its original state, or in the form of charcoal. It is essential to good and profitable fuel that it should be free from moisture; for unless it be dry, much of the heat which it generates is consumed in converting its moisture into vapor; hence the superior value of old, dense, and dry wood, to that which is porous and damp. A pound of dry wood will, for instance, heat thirty-five pounds of water from 32° to 212° , and a pound of the same wood in a moist or fresh state, will not heat more than twenty-five pounds from the same to the same temperature; the value, therefore, of different woods for fuel is nearly inversely as their moisture, and this may be roughly ascertained, by finding how much a given weight of their shavings loses by drying them at 212° .

The following table exhibits at one view the power of various species of wood in producing heat.

The number indicates the quantity of timber in pounds required to raise the temperature of a cubic foot of water from 52° to 212° .

	Pounds.
Oak chips.....	4.20
Elm.....	3.52
Fir.....	3.52
Ash.....	3.50
Hornbeam.....	3.37
Cherry-tree.....	3.20
Beech.....	3.16
Lime-tree.....	3.10
Poplar.....	3.10
Maple.....	3.00
Service-tree.....	3.00

The value of turf and peat, as fuel, is liable to much

variation, and depends partly upon their density, and partly upon their freedom from earthy impurities. A pound of turf will heat about twenty-six pounds of water from 32° to 212° , and a pound of dense peat about thirty pounds; by compressing and drying peat, its value as a fuel is greatly increased.

TO CURE WESTPHALIA HAMS.

Hams may be cured in order to resemble, in taste, those of Westphalia, by the following process: Cover a young ham of pork with dry salt; let it be for twenty-four hours, to draw off the blood; then wipe it perfectly dry, and take one pound of brown sugar, a quarter of a pound of saltpetre, half a pound of bay salt, and three pints of salt; incorporate these ingredients in an iron pan over the fire, and stir them continually till they acquire a moderate degree of heat. In this pickle the ham must be suffered to remain for three weeks, frequently turning it, when it should be suspended in a chimney for drying by means of smoke from no other but a wood fire. The smoke from oak saw-dust, or shavings, is the best for imparting a fine flavor. This smoke contains, imperfectly formed, pyroligneous acid, which is the agent that communicates the flavor to the Westphalia hams. In Dumfrieshire, the pickle for hams is sometimes made with one-half ale, which renders the hams shorter, and adds greatly to the richness of their flavor.

CUTTING UP MEAT.

The mode of cutting up meat, differs in various places. As it is an important matter, we annex an article from an English work, which cannot fail of furnishing important hints.

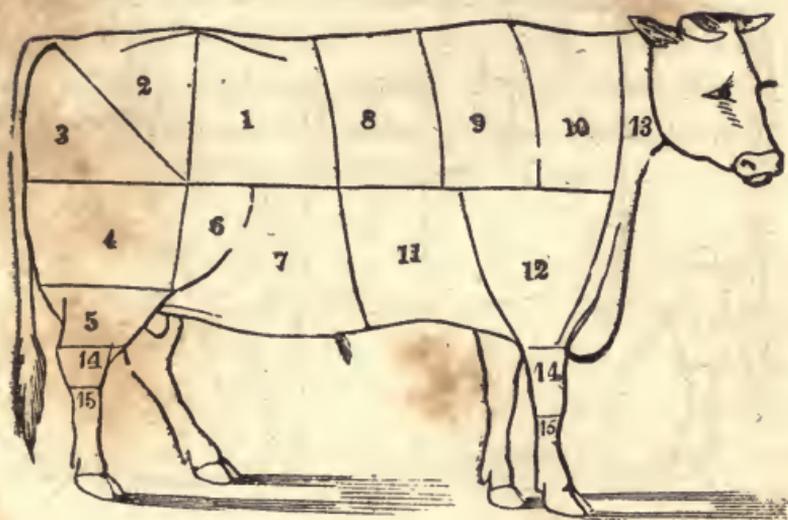
The mode of cutting up meat is more diversified even than the slaughtering, almost every town having its own.

But as London is the emporium of the export meat trade of Scotland, the method of cutting up meat in the metropolis should constitute the particular study of the shippers of meat. To acquire this necessary information, the shippers should have a few of the most expert butchers in London to slaughter and cut up the carcasses of the various sorts of animals. They should never consider themselves above acquiring such information, when their own interest will be benefited by its adoption. Whether the London method of cutting up meat is really the best of any, and we think it is, it must be admitted that the London butchers must have the most extensive and varied experience; and any one has only to witness the operation performed by expert London butchers, to be satisfied that they display great skill in their art, and execute their work with the utmost precision. Indeed, the precision with which they divide the different qualities of meat from the same carcass, shows their thorough knowledge of the qualities of meat; and the variety of prices which different parts of the same carcass fetch, shows with what accuracy they can gratify the tastes of the various grades of their customers.

In practicing this precision, they not only make the best use of the carcass, but realize the highest value for it, and at the same time gratify the taste of the greatest number of customers. In the carcass of any animal, an ox, for instance, there are different qualities of meat, and these qualities are situated in different parts of the carcass. All the best parts are in London used for roasting and steaks, and the inferior for boiling, either in pieces, or making stock for soups, or minced meat, in the various forms of pies, sausages, etc.

The carcass of an ox is cut up into the following pieces, as may be seen on referring to the numbers on the annexed cut, *fig. 1*.

Fig. 1.

*Hind-Quarter.*

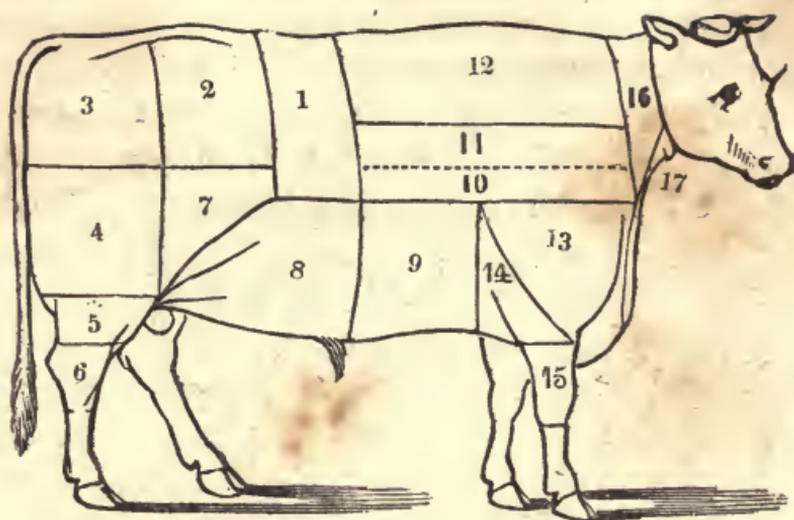
1. Loin.
2. Rump.
3. Itch or adze-bone.
4. Buttock.
5. Hock.
6. Thick flank.
7. Thin flank.
8. Fore-rib.

Fore-Quarter

9. Middle-rib.
10. Chuck-rib.
11. Brisket.
12. Leg of mutton piece.
13. Clod and sticking and neck.
14. Shin.
15. Leg.

The relative value of these different cuts of an ox may be stated at their current value, viz: when the rumps, loins, and fore-ribs of a fine ox fetch 8d. a pound, the thick flank, buttock, and middle-rib will fetch 6d.; the itch or adze-bone, thin flank, chuck-rib, brisket, and leg of mutton piece, 5d.; the clod and sticking, and neck, 3d.; and the legs and shins, 2d. a pound. Such is the difference in value of the different cuts of an ox in the meat markets in London. As an object of comparison, we shall also give a figure of an ox cut in the Edinburgh method, as in *fig. 2*, and the great difference between both methods may be seen at a glance. See cuts

Fig. 2.

*Hind-Quarter.*

1. Sirloin, or back-sye.
2. Hock-bone.
3. Buttock.
4. Large round.
5. Small round.
6. Hough.
7. Thick flank.
8. Thin flank.
9. Nine holes.

} Rump

Fore-Quarter.

10. Large runner.
11. Small runner.
12. Spare-rib, or fore-sye.
13. Brisket.
14. Shoulder lyer.
15. Nap, or shin.
16. Neck.
17. Sticking piece.

It is therefore obvious that, of the two methods of cutting up beef, the London affords much more of roasting and steak, that is, the more valuable pieces, out of the same carcass; and, of course, more money would thereby be realized from it.

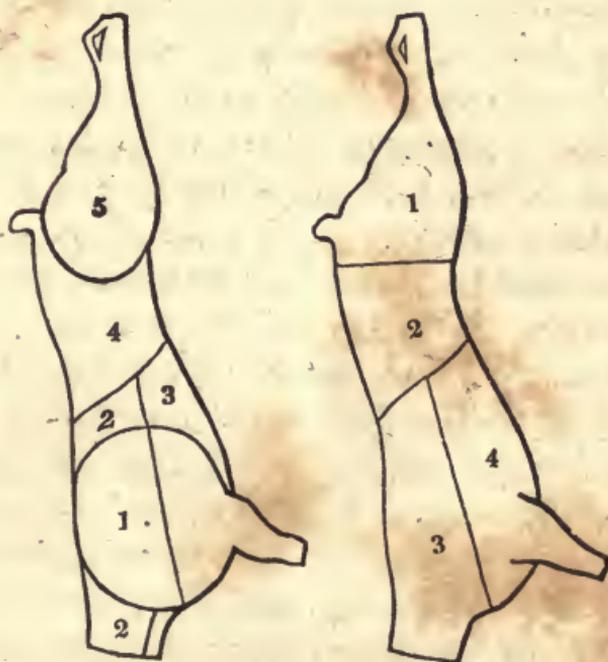
Much of what we have said on the management requisite in sending beef to the London market, will apply equally to sending mutton, veal, or lamb to the same market. The best pieces only should be sent to London, and the remainder kept for the home market: and were this recommendation attended to, the expense of exportation would be diminished on what was sent; for the best

pieces would pack well together in a comparatively small space, whereas, whole carcasses of mutton, by the roundness of the rib, occupy much unnecessary room, for which freight must be paid.

Mutton is also cut up differently in London and Scotland, as may be seen on referring to the figures 3 and 4, of which 3 represents the London method.

Fig. 3.

Fig. 4.



In the fore-quarter, No. 1, is the shoulder, 2 and 2 the neck, after the shoulder has been taken off, and 3 the breast; and in the hind-quarter, 4 is the loin, which, when cut double, that is, partly from both sides of the carcass, is called a chine or saddle, and 5 is the leg. A leg of mutton in London is cut short; a haunch is cut long, taking in the hook-bone, similar to a haunch of venison. The flap of the loin is left attached to that part of the fore-quarter called the breast. The Scotch mode of cutting up mutton, is represented by figure 4, in

which, in the hind-quarter, No. 3 is the gigot, and 2 the loin ; and in the fore, 3 the back-ribs, and 4 the breast and shoulders. The gigot is cut about half way between the leg and haunch of the London method ; and the fore-quarter is cut right through the shoulders in two places, called back-ribs and breast.

Shoulders of mutton are never cut off in Scotland before being cooked, except by keepers of eating-houses : but the London plan of cutting mutton is decidedly the best, the shoulder forming an excellent roast, and the best end of the neck-piece being admirably suited for chops.

The different joints of mutton vary almost as much in price in London as pieces of beef. The leg is sometimes sold as high as 10d. a pound, while the breast of the same sheep will only fetch 4d. or 5d. ; and if, in the wholesale market, the whole carcass is sold at 6d. a pound, the hind-quarter will be worth 7d. and the fore only 5d. From these facts it is obvious, that it is the interest of the shipper only to send hind-quarters of mutton to London, for which 7d. a pound may be easily obtained, and a ready market for them in the west-end butchers, who seldom deal in fore-quarters. The fore-quarter should be sold at home ; hence realizing as much for them as they could fetch in London, besides saving on them the freight, commission, and wharfage. They form excellent joints for tradesmen's families, and are, in fact, generally preferred by them to the hind-quarters, which are considered dry eating, and certainly do not make as good broth as the fore-quarter. Besides the saving of room in packing the hind-quarters, they would run no risk of being stained when sent by themselves, as the staining generally arises from blood oozing out of the veins in the fore-quarter.

Lamb is cut up in London in much the same manner as mutton, excepting that the neck and breast, when the shoulder is taken off, is roasted whole, and the piece is

called *ribs of lamb*. In Scotland, lamb is cut up exactly as mutton.

Veal is cut up in London in a different way from any other meat. The knife is drawn between the buttock and itch-bone, through the pope's eye, taking a sloping direction through the coarse end of the buttock, leaving a flap. The piece thus cut out is called a *fillet* of veal. It is like a round of beef with a part of the thin flank left to be skewered around it. The round bone is taken out, and stuffing is put into its place. When the itch-bone and hook-bone are cut from the loin, the piece is called a *chump* of veal. The hind-quarter of veal thus consists of fillet, chump, loin, and leg. The fore-quarter is cut in the same manner as mutton, having shoulder, breast, and neck. In Scotland, veal is cut very much like mutton.

The London mode of cutting up pork, is the same as the Scotch mode of cutting up mutton, so *fig. 2* will illustrate the mode; in which, in the hind-quarter, No. 1 is the leg, and 2 is the loin; in the fore, 3, back-rib, chine, or hand; and 4, breast and shoulders, spring or belly. The spring is used for pickling, and the hand for roasting, and for chops, or sausages. In Scotland, the hind-quarter consists of leg and loin, and the fore of back-ribs and breast. For pickling or roasting, pork is cut in the hind-quarter like that of English mutton, and in the fore like that of Scotch. In both countries, the ham is cut out alike.

CEMENTS

Of various kinds should be kept for occasional slight purposes, or for mending furniture. Of the first, flour paste is well known; if required to be stronger than usual, a little glue may be boiled in it: some put powdered rosin in it. White of egg, or a solution of glue and strong gum-

water, are good cements. A paste made of linseed meal dries very hard, and adheres firmly. A soft cement is made of yellow wax melted with its weight of turpentine, and a little Venetian red to give it color. This, when cold, is as hard as soap, but can be softened by the warmth of the hand, and is very useful to stop up cracks; and is better to cover the corks of bottles sent to a distance than sealing-wax or hard cement. Plaster of Paris may serve as an occasional cement.

ROUGH CASTING.

This is a cheap and durable method of finishing walls instead of stucco, and is well calculated to protect them from the effects of the weather, but is chiefly employed in small houses and cottages in the country, built of rough stone or rubble. There are two kinds of rough cast. In the first, the wall receives a coat of lime and hair laid on smooth; and as fast as a certain portion of it is covered, the rough cast is thrown or splashed against the wet mortar with a large trowel. This rough cast is made by reducing very fine gravel, or coarse sand, to a uniform size by sifting or skreening, and washing the earth away from it. This is mixed with newly slacked lime and water to the consistence of thick cream. When the plasterer has covered a part of the wall in the manner mentioned, he brushes it over with a whitewash brush, dipped into the pail with the rough cast, so as to lay the whole smooth and even. The intense white of the lime is unpleasant to a person of taste, although in some parts of the country, many delight in it; but this white glare may be easily softened, and a stone color produced, by putting into the mixture a sufficient quantity of yellow, or stone ochre, or Spanish brown, or ochre with brown or black, to produce the desired tint. It will be necessary to try the color on a board or a part of the wall, and to let it dry to determine the exact tint,

and to put more color or more lime and sand till the tint be adjusted. Either a sufficient quantity should be made for the whole building, or very great care must be taken to get the same tint in every quantity that is used, or the coloring will look patchy ; and it is to be observed, that the tint given must be very light, otherwise it may be worse than pure white.

ANOTHER METHOD OF ROUGH CASTING.

Upon the first coat of lime and hair there is thrown, while it is yet in a soft state, a quantity of very small angular fragments of stone, as limestone, granite, etc. These fragments being pressed stick in the mortar, and are firmly fixed there when the latter is dry and hard. This mode is much practiced in Bristol, where broken spar from the quarries gives a rich glittering appearance to the houses done with it.

COLORING FOR WALLS.

A coloring for outside walls may be made of fresh-slaked lime, to which a little sulphate of iron added will give a warm tint. This coloring is useful for a brick house that has become black and dirty : it should be done before the wall is fresh pointed, and if the tint be well chosen, the house will look nearly as if just built.

Painting stone or stuccoed walls with oil colors has been found sometimes a good practice, and preserves them very much.

Lime-whiting is a wash, made by mixing quick-lime with water alone, and laying it on with a large flat brush ; it is used for areas and similar places. If required not to be capable of being rubbed off, some coarse size may be added.

An excellent lime-wash for walls, or boarding of out-houses or cottages, may be made as follows : Half fill

with water a tub of six or eight gallons, and add to it as much of clean, sharp, and rather coarse sand, and of lime fresh burnt, in about equal quantities, as much as will make, when it is well stirred up and mixed, a wash of about the thickness of cream. Lay this on the walls with a large brush, taking care to stir up the mixture every time the brush is dipt into it, so as to take up as much sand as possible. The more fresh the lime the better, which, if good and proper for the purpose, will make the water hot.

PAINTING IN DISTEMPER,

Is mixing the colors up with size instead of oils, as a vehicle. Some balls of fine whiting are laid to soak in water over night; and the size, rendered liquid by warming in a pipkin, is poured in, and well stirred up with the whiting. Some colors, finely ground, are added, according to the tints required. This kind of painting is much cheaper than oil color, and has no gloss whatever; but, though it looks extremely well if kept clean, it has the inconvenience of being easily stained; and, as it does not bear washing, any foul marks cannot be removed, neither can they be painted over, as the color cannot be exactly matched again, and any attempt to touch them with paint would only increase the evil. It must be done upon very smooth and dry plastered walls, or upon papered walls. Woodwork is never painted in distemper, as it would not form a good preservative; nor can it be employed in outside work. It demands, like flatting, to be laid on with dispatch and dexterity—not to be streaky and uneven. If possible, the whole side of a room should be covered, before any one part has quite time to be dry; for this, sufficient color should be mixed up, and a sufficient number of hands employed.

Various tints in distemper may be made as follows:

Straw colors ; with whiting, masticot, and Dutch pink ; or with whiting, yellow ochre, and a little Venetian red. Fawn color ; whiting, Venetian red, and a little black or burnt umber ; or white and burnt sienna. Grass ; white and verditure, with Venetian red ; or with white, Venetian red, and Prussian blue. Pea green ; with white and Olympian green ; or with white, yellow ochre, Prussian blue, and raw umber. Olive green ; with white, Prussian blue and burnt umber, and yellow ochre.

Those who wish to paint in distemper must practice mixing up the colors, which is more difficult than in oil, because the tints dry much lighter than they appear when wet. It is necessary, therefore, in order to ascertain what color a certain mixture will produce, to paint a slip of paper over with it, and dry it at the fire to see the tint ; if this be neglected, the operator will be entirely deceived with respect to the color of his painting. Nevertheless, it is so easily done, that any one possessed of a little ingenuity may paint over a small room ; a circumstance worth knowing, where cleanliness with economy is a great object : and it has the advantage of giving little or no offensive smell during the operation, and for some time afterward, as oil paint does, but may be begun and finished in a day or two. Two coats are generally necessary to cover completely.

When old plastering has become discolored by stains, and it is desired to have it painted in distemper ; it is advisable to give the surface, when properly cleansed off and prepared, one coat at least of white lead in oil, with some spirits of turpentine, which will generally fix all old stains that would otherwise come through ; and, when quite dry, this will take the water-colors very kindly.

When we reflect upon the great importance of cleanliness in our dwellings, the value of painting, both in oil and in distemper, should appear striking.

SUBSTITUTE FOR SIZE.

A very good substitute for size can be prepared from potatoes. Make starch from the potatoes in the usual manner, mix the whiting and water to the proper consistence, and add the starch. This has the advantage of being wholly without smell, and is also beautifully white. It forms an excellent material for whitening ceilings. It may be observed that, as whiting is only washed chalk, the latter, pounded very fine, may be made shift with, when whiting cannot be procured.

MILK PAINT.

A paint has been used in Europe with success, made from milk and lime, that dries quicker than oil paint, and has no smell. It is made in the following manner: Take fresh curds, and bruise the lumps on a grinding-stone, or in an earthen pan, or mortar, with a spatula or strong spoon. Then put them into a pot with an equal quantity of lime, well slacked with water, to make it just thick enough to be kneaded. Stir this mixture without adding more water, and a white-colored fluid will soon be obtained, which will serve as a paint. It may be laid on with a brush with as much ease as varnish, and it dries very speedily. It must however be used the same day it is made, for if kept till next day it will be too thick: consequently no more must be mixed up at one time than can be laid on in a day. If any color be required, any of the ochres, as yellow ochre, or red ochre, or umber, may be mixed with it in any proportion. Prussian blue would be changed by the lime. Two coats of this paint will be sufficient, and when quite dry, it may be polished with a piece of woollen cloth, or similar substance, and it will become as bright as varnish. It will only do for inside work; but it will last longer if varnished over with white of egg after it has been polished.

The following recipe for milk paint is given in "Smith's Art of House-painting." Take of skim-milk, nearly two quarts; of fresh-slacked lime, about six ounces and a half; of linseed oil four ounces, and of whiting three pounds; put the lime into a stone vessel, and pour upon it a sufficient quantity of milk to form a mixture resembling thin cream; then add the oil, a little at a time, stirring it with a small spatula; the remaining milk is then to be added, and lastly the whiting. The milk must on no account be sour. Slake the lime by dipping the pieces in water, out of which it is to be immediately taken, and left to slack in the air. For fine white paint, the oil of caraway is the best, because colorless; but with ochres, the commonest oils may be used. The oil, when mixed with the milk and lime, entirely disappears, and is totally dissolved by the lime, forming a calcareous soap. The whiting or ochre is to be gently crumbled on the surface of the fluid, which it gradually imbibes, and at last sinks: at this period it must be well stirred in. This paint may be colored like distemper, or size-color, with levigated charcoal, yellow ochre, etc., and used in the same manner. The quantity here prescribed is sufficient to cover twenty square yards with the first coat, and will cost about three, half-pence a yard. The same paint will do for out-door work, by the addition of two ounces of slacked lime, two ounces of linseed oil, and two ounces of white Burgundy pitch: the pitch to be melted in a gentle heat with the oil, and then added to the smooth mixture of the milk and lime. In cold weather it must be mixed warm, to facilitate its incorporation with the milk.

MENDING CHINA.

When holes are required to be drilled in china or earthenware for the purpose of riveting it when broken, procure a three-cornered file, and harden it completely by making

the end red-hot, and plunging it into cold water; then grind the point quite sharp on a grindstone, and afterward on an oil stone. Then, with the point of this tool, pick repeatedly on the spot to be bored, taking care not to use too much violence, lest the object should break. In a short time, or in a few minutes, by a continuance of the operation, a small conical piece will be forced out, not bigger than a pin's head, and the hole may afterward be widened, by introducing the point, and working the file round.

The best cement for broken china or glass, is that sold under the name of the diamond cement, which is colorless, and resists moisture. This is made by soaking isinglass in water till it is soft, and then dissolving it in proof spirit. Add to this a little gum ammoniac, or galbanum and mastic, both dissolved in as little alcohol as possible. When the cement is to be used, it must be gently liquefied, by placing the phial containing it in boiling water. The phial must be well closed by a good cork, not by a glass stopper, as this may become fixed. It is applied to the broken edges with a camel's-hair pencil.

When the objects are not to be exposed to moisture, white of egg alone, or mixed with finely-sifted quicklime will answer pretty well. Shell-lac, dissolved in spirits of wine, is better.

A very strong cement for earthenware is made by boiling slices of skim-milk cheese with water, into a paste, and then grinding it with quicklime in a marble mortar, or on a slab with a mallet.

CUTTING GLASS.

Panes, or flat pieces of glass, may be divided, when a glazier's diamond is not at hand, by making a notch with a file, and carrying a piece of hot charcoal in the line in which it is wished the fracture should proceed. The

charcoal must be kept alive with the breath. A red-hot iron will also do.

VARIETIES OF CHEESE.

Cheshire Cheese.—This cheese is famous for its rich quality and fine piquant flavor. It is made of entire new milk, the cream not being taken off. The cheeses are generally of very large size, usually about sixty pounds weight, and some have been made of one, or even two, hundred weight. Each cheese is usually made of the produce of one day's milking, from herds of from one to two hundred cows, who feed in rich pastures on some of the finest land in England. Their excellence must be attributed to the goodness of the milk, their size and age, and the skill employed in their manufacture. The color is not entirely natural; but a yellow tint is given by *arnotto*, marigolds, or carrots. It is said, that some increase the richness and mellowness of the cheese by adding beef-suet, or any other wholesome and sweet fat well clarified, which is poured into and mixed with the curd.

Gloucester Cheese is much milder in its taste than the Cheshire. There are two kinds of Gloucester cheese, single and double. *Single Gloucester* is made of skim-milk, or of the milk deprived of half the cream; of course it is not very rich, but is often of good flavor. *Double Gloucester* is a cheese that pleases almost every palate; it is made of the whole milk and cream, and is a fat cheese, usually the kind employed for toasting, though the single often toasts very well. These cheeses are made of various sizes, the single generally eight to the cwt., and very thin, and the double four to the cwt., and at least twice as thick. As the two kinds sometimes resemble each other considerably, some honest farmers stamp the figure of a heart upon the single Gloucester, to distinguish it from the double. The true characteristics of Gloucester cheese

consist in its great richness, together with the mildness of its flavor, and that smooth, waxy texture which makes it cut, even in thin slices, without crumbing as Cheshire cheese is apt to do. Its oily matter is retained in toasting, by softening without being burned.

Stilton Cheese.—This, from its peculiar richness and flavor, has been called the Parmesan of England. Its name is derived from having been the first made at Stilton in Leicestershire, though it is now manufactured very generally throughout the counties of Cambridge, Huntingdon, Rutland, and Northampton. It is made by adding the cream of one day to the entire milk of the next. The cheeses are all of a size, from six to eight pounds weight, and are of a cylindrical form, made in a deep vat, and are not considered to be sufficiently mellow until they are two years old, nor ripe until they exhibit spots of blue in the interior, marking the commencement of decay. It is said that some keep them in warm damp cellars to accelerate the ripening. The blue part is of a peculiar nature, different, it is said, from the common blue mould of cheese. The decay should not be advanced beyond a certain point. A variety of Stilton, but not so rich or of so fine a flavor as the last, is made in a net, and of the form of a pine cone, the net impressing lines on its surface.

Cottenham Cheese, made near a town of that name in Cambridgeshire, is a thicker kind of cream cheese than Stilton. Its superior delicacy and flavor are attributed to the fragrant herbage on the commons where the cows are pastured.

Sage Cheese, called also green cheese, is made chiefly in the vales of Gloucester and Wiltshire, by coloring some curd with bruised sage, marigold leaves and parsley, and mixing this with some uncolored curd; the whole is then made into a cheese, which, of course, exhibits a mottled appearance.

Among the Romans, it was a practice to flavor cheese with thyme and other sweet herbs ; and this custom was continued during the middle ages. We are told, that the Emperor Charlemagne, arriving at a bishop's palace on a fast day, could get nothing but bread and cheese. The prelate, observing the king picking out with his knife small specks, which he mistook for impurities in the cheese, informed his guest that they were parsley seeds. The monarch tasted them and liked them so much, that he requested the prelate to send him an annual supply of cheese prepared in this manner.

Cheddar Cheese is not exclusively made at the village of Cheddar, in the Mendip Hills, Somersetshire. A great deal of the same kind is also made round Bridgewater, and in the marshes round Glastonbury. The cheese is peculiar, much resembling Parmesan ; it has a very agreeable taste and flavor, and has a spongy appearance, the eyes being filled with a limpid and rich, but not rancid, oil. The cheeses are generally large. But little of the prime Cheddar cheese is made, that generally sold for it not being genuine, and is inferior.

Brickbat Cheese.—There is nothing remarkable in this except its form. It is made by turning with rennet a mixture of cream and new milk. The curd is put into a wooden vessel, the shape of a brick, and is then pressed and dried the usual way. It is best made in September, and is ready in six months.

Dunlop Cheese is famous in Scotland : it is so called from the parish of Dunlop in Ayrshire, where it was first or best made, and where the pastures are very rich ; but it is now manufactured in other parts of Ayrshire. The best is made entirely from new milk, and it has a peculiarly mild and rich taste ; but there is nothing remarkable in the manner of making it.

In some parts of England they never churn the milk,

but only the cream; consequently they make little butter-milk, because the servants will not eat this, though they have no objection to skim-milk. In Scotland and Ireland, on the contrary, they churn all the milk, and have of course much butter-milk, which is much relished there.

In the Highlands of Scotland, they make a cheese for the table of a very high *gout*, an almost Tartarian preparation, by allowing the milk to become sour, and to coagulate of itself, which gives a flavor even more pungent than that of goat's-milk cheese.

What is called in London *new cheese*, is made chiefly in Lincolnshire, and is either made all of cream, or, like the Stilton, by adding the cream of one day's milking to the milk that comes immediately from the cow: they are extremely thin, and are compressed gently two or three times, turned for a few days, and then sent to be disposed of to be eaten new with radishes, salad, etc. It may be made in the following manner: Warm some cream, add rennet in the proportion of a spoonful to a pint, or more if necessary. Put the curd into a sieve, having a cloth at the bottom; when it has remained twenty-four hours, transfer it to a cheese vat, and cover it with a wet cloth and board; in about two hours it may be used.

Skim-milk Cheese.—Cheese made from curd of skim-milk, when all the cream has been separated, has in it no butyraceous matter, but is the caseous substance in a pure state, resembling very nearly white of eggs, or albumen, or perhaps more nearly the gluten of wheat. This cheese from skim-milk only, is made in those districts of England where butter is the chief object of the dairy-man, as in Essex and Suffolk. What is made in England of this kind has scarcely any flavor, and dries almost as hard as a horn, but it is as digestible as the softer cheese, though not very palatable. It is, however,

useful as part of ship stores, being less liable to spoil on a sea voyage than richer cheese, particularly in a warm climate ; on the subject of skim-milk cheese Dr. Anderson, celebrated for his writings on agriculture, observes, that it is an erroneous idea to suppose that the agreeable taste of cheese depends solely upon the quantity of oily or fat matter it may contain. Parmesan cheese is made of skim-milk ; so are the Dutch cheeses, which many consider as very pleasant tasted. He has seen cheese made of skim-milk, that ate exactly like the finest cream cheese ; and he considers that what is called richness in cheese, depends as much upon the particular mode in which they are manufactured, as upon the materials of which cheese consists. In confirmation of this opinion he remarks, that though the taste of Double Gloucester differs so much from Cheshire cheese, yet they are both made from the same kind of milk.

Parmesan Cheese.—This most celebrated of all cheese is made in the duchy of Parma and Piacenza, and in various parts of Lombardy : at present, the district of Lodi is in high repute for it. It was formerly supposed to be made from goat's milk, and the high flavor which it has, is supposed by some to be owing to the rich herbage of the meadows of the Po, where the cows are pastured ; and by others, solely to the process by which it is manufactured, a particular account of which may be seen in Cadell's "Journey in Italy, 1818." Half the milk has stood sixteen or seventeen hours, and the other half has stood only six. The milk is heated and coagulated in a cauldron ; and without being taken out of the cauldron, the curd is broken very small by an implement consisting of a stick with cross wires ; it is, again heated, or rather scalded, till the curd, now a deposition from the whey, has attained a considerable degree of firmness ; it is then taken out, drained, salted, and pressed ; and in forty days

it is fit to put into the cheese loft. The Parmesan is kept for three or four years, and none is carried to market till it is at least six months old. Another account of the manner of making it is to be found in the seventh vol. of the Bath Society's papers, and in the second vol. of Mr. Arthur Young's "Travels in France."

Dutch Cheese.—In Holland they coagulate their milk with muriatic acid instead of rennet, which occasions that pungent taste peculiar to this cheese, and preserves it from mites. The *Gonda* is most celebrated, which is made with extraordinary care. A detailed description of the mode of making it is in the *Jour. Agri. des Pays Bas*; and is quoted in the excellent work by Margaret Dodds. The best Dutch cheese is made in the environs of Leyden, at Eidam and Friezland, where also a very large quantity is manufactured for England, of skim-milk, chiefly for sea stores. In the Texel, they make cheese from ewes' milk; a good deal of Dutch cheese, of a round form, comes now to London; it is of a low price, and frequently of very good quality.

Swiss Cheese.—Switzerland has been long celebrated for its cheese: several varieties of cheese are produced there, and although made of skim milk, or partially skim-milk, yet are they remarkable for their fine flavor, which is partly owing to the herbage of the mountain pastures. That denominated from *Gruyere*, a bailiwick in the canton of Fribourg, is best known in England. This is flavored by the dried herb of *melilotos officinalis*, in powder. The cheeses weigh from forty to sixty pounds each, and require to be kept in a damp place, and washed frequently with white wine to preserve it from the depredations of insects. Until of late, the manufacture of this cheese was limited to a few wealthy persons: as it is necessary for its quality that the cheese should be very large, and that the milk should be coagulated on the

day that it was taken from the cow, it was only by keeping a large number of cows that the manufacture could be carried on ; and the owner of a few cows only was unable to succeed. At present, however, it appears that cheese dairies have been established by the poor peasantry joining together, and thus competing with the more wealthy. Another excellent cheese is made at *Neufchatel*. The *Schabziegar* cheese is made by the mountaineers of the canton of Glarus. It has a marbled appearance and aromatic flavor, from the bruised leaves of the melilot. The milk is exposed to the temperature of 46° for five or six days, when the cream is completely formed, and is taken off. The skim-milk is coagulated by sour milk, and not by rennet, and the curd thus obtained is pressed strongly in bags, and when sufficiently pressed and dried, it is ground to powder, salted and mixed with the bruised flowers or seeds of the *melilotos officinalis*, and afterward again pressed into cheese. The entire separation of the cream, or unctuous part of the milk, is essential. Some Swiss is also manufactured from a mixture of ewe-milk with that of the cow.

Westphalia Cheese is a skim-milk cheese, and is a remarkable instance of how much the quality of the cheese depends upon the manufacture. It is described by some as being preferable to the Dutch, Swiss, and even Parmesan, cheese. The cream is allowed to remain till the milk beneath is sub-acid ; it is then removed, and the milk placed near a fire to coagulate. The whey is next expressed from the curd, which is dried and crumbled between the hands. It remains for several days, until the putrid fermentation commences ; but this is stopped by kneading it into balls with caraways, salt, butter, pounded pepper, and cloves. Sometimes these balls, or little cheeses, are hung up in the smoke of a wood fire.

Cheese from milk and potatoes, is manufactured in

Thuringia and Saxony. The best potatoes are half dressed in steam, peeled, and reduced to a pulp. Five pounds of this are mixed with from one to ten pounds of sweet curd, and kneaded together, some salt being added : after lying for a few days, this is again kneaded, and then pressed into little baskets, where the superfluous moisture drains off; the cheese is then formed into balls, and then dried in the shade. These cheeses keep well in the dry, and their quality improves with age, with the advantage that they generate no vermin; their taste is said to exceed the best cheese made in Holland.

Cream cheese, although so called is not properly cheese, but is nothing more than cream dried sufficiently to be cut with a knife. To make it, a quantity of good sweet cream is put into a cheese vat, with green rushes sewed together on purpose, at the bottom of the vat, which must have a sufficient number of holes to let the whey which drains off, pass freely away. On the top of this cheese are likewise laid rushes, or long grass of the Indian corn, in the same manner as at the bottom, in order to allow it to be turned without being handled. It is usual to make these cheeses from one inch, to one inch and a half in thickness. The thinner they are made, the sooner they are ready. It is kept in a warm place to sweat and ripen; but extremes of heat or cold are injurious, and some judgment must be used in managing it.

SAGE.

There are several sorts, as the red, the green, the small leaved, and the broad-leaved balsamic. Its chief use in cookery is in stuffings and sauces, to correct the too great lusciousness of strong meats, as goose, duck, or pork : its taste is warm, bitterish and aromatic, qualities which depend upon an essential oil. The red has the most agreeable and fullest flavor for this purpose; the green is the next;

the two last are used in medicine. Sage has had great reputation formerly, on account of its medicinal qualities ; but at present, these do not appear to be much regarded. It possesses, however, some aromatic and astringent powers ; and a decoction, or sage tea, is found serviceable in debility of the stomach, and in nervous cases. The Chinese sometimes prefer it, it is said, to their own tea. It is useful as a gargle in sore throat, and it is grateful and cooling. The broad-leaved balsamic species is the most efficacious for its medical qualities, and as a tea herb. It is also introduced into cheese.

MINT.

There are several species of mint that grow wild, found chiefly in low moist situations, and they are likewise cultivated. They are all distinguished by a well known and peculiar aromatic flavor, and some are employed in culinary preparations, others yield a highly odoriferous and pungent essential oil by distillation. None of them are in the least poisonous ; but they are very different both in appearance and their uses.

Spearmint.—This is the common mint cultivated in our gardens, and employed in different processes of cookery, as having the most agreeable flavor ; the leaves are sometimes boiled in certain dishes, and afterward withdrawn. They likewise form an ingredient in soups, and are sometimes used in spring salads. They are also dried for the winter, and in this manner lose none of their flavor. Mint is stomachic and antispasmodic, and is useful in flatulencies ; these qualities probably led, independently of its agreeable flavor, to its universal use in pea soup, in which it is a valuable ingredient.

Peppermint.—This is cultivated entirely for the essential oil distilled from it. Its taste is stronger, warmer, and more pungent than spearmint, and leaves a sort of

coolness on the tongue after tasting it. It yields a little camphor, to which its taste is partly owing, and its medicinal uses are well known.

Pennyroyal mint, has a warm pungent flavor, but less agreeable than common mint. It is employed in some particular dishes in cookery, and formerly chiefly for medical purposes, but is now little used.

MARJORAM.

There are several species of marjoram, but that which is preferred for cookery, and which is cultivated in our gardens for this purpose, is the *sweet marjoram*, also called knotted marjoram. The leaves are dried as a seasoning herb, having an agreeable flavor. There is also a *winter sweet marjoram*, used for the same purposes. *Pot marjoram*, *common* or *wild marjoram*, is found growing in our fields. This has nearly the same flavor, but is inferior, and is only used when the others are not at hand. All these are favorite ingredients in soups, stuffings, etc.

TANSY.

Tansy grows wild, and is cultivated in gardens. Its leaves, having a powerful aromatic bitter, are sometimes chopped or bruised, to put into certain puddings, or the juice alone is so employed : its use is very ancient. There are three varieties ; the *plain* and *curled leaved*, and the *variegated*

SAFFRON.

It is now chiefly employed as a coloring matter for cheese and butter. When good saffron has a beautiful yellow color, and an agreeable odor, it yields its active principle, an essential oil, to water and spirit. Dr. A. T. Thomson, in his *Materia Medica* states, that it excites the

the nerves of the stomach, and it is in some degree narcotic; its incautious use has sometimes been attended with dangerous consequences. It is sometimes adulterated with safflower and marigolds; but the adulteration is easily detected, for the petals of these flowers will appear distinct from the stigmata of the crocus.

RHUBARB.

This is one of the most useful and best of all the productions of the garden that are put into pies and puddings. It was comparatively little known, till within the last twenty or thirty years, but it is now cultivated in almost every British garden. The part used is the foot-stalks of the leaves, which, peeled and cut into small pieces, are put into tarts, either mixed with apples or alone. When quite young, they are much better not peeled.

CORIANDER.

This plant, of eastern origin, has been long cultivated for its seeds, which are highly aromatic, and form one of the less agreeable spices: they are employed by the distiller in flavoring spirits, by the confectioner for incrusting with sugar, and by the druggist in medicine. Its tender leaves are also sometimes used in soups and salads, and in Peru the seeds are employed in great excess to season their food.

CARAWAY.

The caraway is found growing in meadows. It is likewise cultivated for its seeds. The seeds have a pleasant aromatic odor, and a sweetish, warm, pungent taste, depending upon an essential oil, which is easily extracted by rectified spirit, and partly so by water. They are employed in confectionary in cakes, biscuits; etc.; in medicine, as a carminative, and for flavoring spirituous

liquors; and the young leaves are sometimes used in soups: formerly the roots were eaten as parsnips, and by some are thought to be not inferior.

CAMOMILE.

This very useful, and generally used, aromatic bitter, is cultivated on account of its flowers, an infusion of which forms an excellent stomachic, known by the name of *camomile tea*. Though the double sort is more raised by gardeners, the single is the best and strongest as a medicine. The flowers are kept dried in bags. The active principle of camomile is a resinous substance called *piperina*, discovered by Dr. A. T. Thomson.

WORMWOOD.

The intense bitter of this plant is so great as to render it proverbial. Its odor is strong, and though fragrant, yet to many persons it is disagreeable and nauseous. It grows wild but is likewise cultivated for several purposes, though less used than formerly. It has tonic properties, and is sometimes employed as a stomachic. The French beverage or liquor, called *eau d'absinthe*, thought to create an appetite, is prepared from wormwood, by the addition of alcohol and subsequent distillation. The active part seems to be the extractive, for the essential oil which it contains is not in the least bitter. Before the use of hops was known, wormwood was much employed in the composition of beer or ale: for this purpose it was gathered when in seed, and dried: some prefer its flavor to that of the hop.

BALM.

Balm, formerly much employed in medicine, is still found to make a very grateful and useful drink in fevers. The herb, in its natural state, has a weak aromatic taste, and

a pleasant smell somewhat of the lemon kind. The leaves may be kept dried in the sun or oven, and preserved for use.

PURIFYING WATER.

As it is sometimes impossible to procure water pure and fit for domestic purposes, it is important to know by what method it may be purified, as it is called, that is, deprived of those substances which contaminate it; for it is to be remembered that water, in itself, is necessarily pure and incapable of change, and that when it is unfit for use the cause must be attributed to the presence of foreign matters; in other words, substances which do not belong to it.

Sponge may be employed for filtering, by compressing it into the neck of some vessel made to hold the water; this substance is very convenient, as it may be easily taken out, cleaned, and replaced.

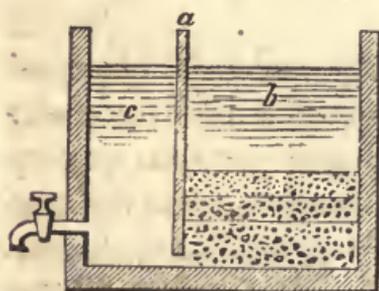
But the best material for filtering water is charcoal. This substance not only acts mechanically by its porosity as a strainer, but it has the valuable and peculiar quality of preventing putrefaction, by absorbing at once the gaseous matter that is generated, and thus impeding decomposition. Sailors have long been acquainted with this property of charcoal, and they have found it to be an excellent practice to char the inside of the casks in which they take water to sea in long voyages. It was once supposed that the chief use of this was to prevent the water from contracting a disagreeable taste from the wood, but it is now known that it not only effects this, but that it acts much more powerfully, by absorbing all putrid matter and offensive odor, and thus rendering, in a considerable degree, even foul and unwholesome water salubrious and transparent.

The best charcoal for this purpose is that produced by

burning animal substances, called *animal charcoal*, which is more effective than vegetable charcoal. Charcoal has likewise the property of absorbing coloring matter; brandy may be rendered white by being passed through it, and port wine has been rendered pale: it is also used for whitening the syrup of sugar.

Nature effects filtration by means of beds of sand.—Water that has percolated through these issues is perfectly transparent and clear, and freed from everything except what it holds from solution. Art, imitating nature, employs sand for the same purpose, and filtering beds upon a great scale have been formed for purifying water, the supply of towns, and for domestic purposes. Little more, indeed, seems necessary for rendering water perfectly pure, where the impurities are merely of a mechanical nature.

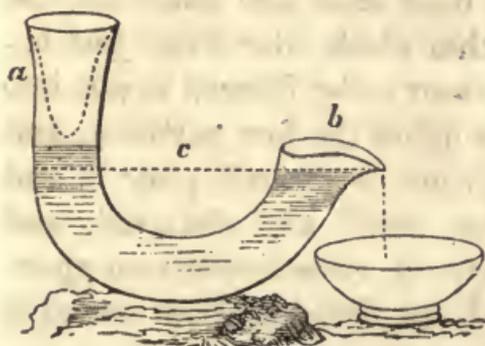
To filter water by means of sand, it is the practice in many places, particularly in France, to construct cisterns in the cellars, and to divide them into two unequal parts by a partition, *a*, that does not reach quite to the bottom. The largest of these divisions, *b*, is half filled with layers of sand of different degrees of coarseness, and into this the water to be filtered is put; in passing down through the sand, all the mechanical impurities are detained, and it rises into the other division, *c*, perfectly clear. This method is so simple, that it may be practiced anywhere without difficulty. The shape and size of the cistern are quite immaterial. If a cock is placed in the smaller division to draw off the water, it should be fixed a little way above the bottom, lest there might be some slight sediment which would be disturbed. It is obvious that the sand



can only answer the purpose for a certain time; for it must become clogged with the impurities and sediment from the foul water, and will require renewal more or less often, in proportion to the foulness of the water. The sand should be well washed before it is used, and it should contain no earthy matter, as this would defeat the object of filtration. Clean sharp sand is best, and it should be separated by sieves into various degrees of coarseness, to place in different layers, the finest being put at the bottom.

It may be remarked, that when water is filtered by nature through beds of sand, it ascends to the surface, by which the purification is more completely effected than by descent. In the latter case, some impurities might be forced through by the weight of the water, or by their own gravity; but, in the former case, gravity must oppose the ascent of the impurities, which are therefore more likely to remain behind. Filters have been executed on this principle, by making the water pass upward through the sand and charcoal, or other filtering materials.

A very simple apparatus of this kind was made long ago

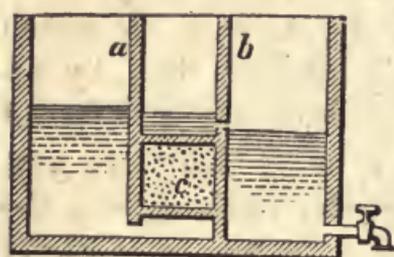


by M. Parrot, of Paris, which has been the origin of much of the recent apparatus for this purpose. As it may be very easily executed, it might be sometimes useful to travellers, who may find it difficult, in some situa-

tions, to procure pure water. a b c, represents a curved tube, either round or square, into which sand, or sand and charcoal, are put, up to the level of the dotted line at c. A little flannel bag is put into the end a, and water poured into this has its coarsest impurities retained by the flannel; and in passing through the sand, in the

lower part of the tube, and rising upward to *b*, is completely purified, and drops into a vessel placed below. If found necessary, a piece of linen or muslin may be tied over the mouth, *b*, to prevent any particle of sand coming over. A tube of this kind, about three inches in diameter, will filter about three quarts of water in an hour. The longer the leg *a*, the more rapidly it will filter, from the pressure of the water. The sand should be made pretty compact, for the slower the passage of the water, the more it will be purified.

Upon this principle, an improved mode of filtering has



been effected in cisterns, namely, by forcing the water to ascend through the filter, instead of descending. Here the cistern has two partitions, *a* and *b*. That at *a* does not reach quite to the

bottom, and the other has an apparatus at *b*. In the middle division, a piece of perforated metal, wood, or stone, or a cloth, is fixed a little above the bottom; on this is placed a layer of small pebbles, then coarse sand and layers of charcoal, then finer sand and charcoal, the whole being covered by another cloth, also fixed just below the aperture *b*. The water to be filtered is put into the division *a*; it then passes below the first partition, and by its pressure rises through the perforated plate *c*, and likewise through the pebbles, sand, and charcoal, and passing through the cloth above it, runs through an aperture in the partition *b* into the last division, from which it is drawn by a cock as it is wanted.

An easy method of cleaning the filtering materials is by making the water pass through them in a contrary direction to what it does when filtering. For example, supposing, as we have just stated, the division *a* is that which receives the foul water, and *b* that which receives the

purified water. Then, to clean the filtering apparatus, reverse the process, and fill the division *b* with unpurified water; it will pass through the aperture in the partition *b*, and descend through the cloth, the sand, and perforated plate *c*, rising in the division *a*, and carrying with it all the impurities, which may be drawn off by a pipe fixed in the bottom.

CHEMICAL TESTS FOR EXAMINING WATER.

When good water is first taken up, it is perfectly clear and colorless; but the examiner should not be satisfied with holding up a glassful between his eye and the light; he should also pour some into a deep ale glass, into which he should look downward, when the slightest tinge from extraneous substances will appear.

If the water be discolored in any manner, it is usually owing to some impurity mechanically suspended in it, and which may be removed by rest and filtration, in the manner already described: but the impurities may likewise be dissolved in the water, in which case they will pass through the filter, which has no power of separating them.

To determine whether the water contains lime in any form, the *oxalic acid* should be employed, as the best test for this earth. All waters containing lime are more or less injurious to health, affecting the kidneys if they are drank for any continuance. Some of the springs about London contain a great deal of sulphate of lime, and are unfit for washing, and would be unhealthy to drink. To explain the principle upon which oxalic acid proves the presence of lime, it must be observed, that lime has a stronger attraction for the oxalic than it has for any other acid; therefore it will quit whatever acid it may be combined with in a dissolved state, and unite to the oxalic, forming an oxalate of lime, which, being insoluble in

water, will fall down as a white precipitate. But instead of using pure oxalic acid, it is better to employ it as joined to ammonia, or the *oxalate of ammonia*.

To detect the presence of iron in water, add to it *tincture of galls*; if there be iron, a black precipitate like ink will be perceived: but for this purpose the water must not be boiled, for in that case the carbonic acid would be driven off, and the iron would fall down, and would not be affected by the test. *Prussiate of potash* in the same case, will give a blue precipitate like Prussian blue. If this test give the same colored precipitates after the water has been boiled, then the iron is not in the state of a carbonate, but is, most probably, a sulphate of iron. If it be required to determine whether the salt be a sulphate, add muriate or nitrate of barytes to some of the water, and if it be a sulphate, but not otherwise, a precipitate will appear.

Vegetable or animal matter may be detected, by adding sulphuric acid and evaporating the water: if such matter be present, the water will become blackened.

BREAD FROM THE BARK OF THE PINE.

From the civilized state in which we now live, we can form but faint ideas of the necessitous situation under which many of the inhabitants of the globe exist, and in comparison of whom our poorest cottagers may be considered in a state of ease. Von Bush informs us that, in the rigorous and unfertile climates of Norway and Lapland, necessity obliges the inhabitants to make use of the inner bark of the common Scotch fir (*Pinus sylvestris*) for food. In the spring season they cut down the older trees, and stripping off the bark, collect the soft white succulent interior part, which in the early time of the year has a sweet milky juice in it, and is the new layer of wood in an incipient state; when they have occasion to use it, they dry

this at the fire, or bake it in an oven, till it becomes brittle, then beat it and grind it into meal, and after steeping the farinaceous part or flour in warm water, to take off the resinous taste, they mix it with a small portion of oats, or moss, and make it into thin cakes, about an inch thick, which are baked for use. The poor inhabitants are sometimes constrained to live upon this disagreeable food for a great part of the year. We learn from the same authority, that "in summer the Laplanders scarcely eat anything but fish from the fresh-water lakes, and drink with great eagerness the water in which the fish has been boiled. In winter they must put up with dried fish, and the innermost bark of the fir, which they strip off in the summer, divide it in long strips, and hang them in their dwellings to dry for winter stores. When used, these strips of bark are minced into small pieces along with the rein-deer tallow, and boiled together for several hours with water, till they form a thick broth." Dr. Prout suggests, with respect to this process, that during the long boiling, the lignin, or woody fibre may perhaps combine with the water, so as to form a kind of starch, which is soluble in the stomach; but the precise nature of the change is not yet understood.

The young shoots of the fir, stripped of their leaves, just as they begin to appear in the spring, are sought for with avidity by the children, and are very wholesome, forming an agreeable salad; these are also stored in winter for the rein-deer. In the same countries, also, they dry the root of the water dragon, (*Culla palustris*) grind it to flour, and mix it with the above. The inner bark of the elm and of other trees, has been employed in the same manner.

TO PRESERVE FISH.

To preserve fish quite fresh, for a short time, requires even more care than meat. They should be kept in a

very cool place, an ice-house if possible ; but if that cannot be had, they should be laid upon a stone floor or shelf, and dipped in cold salt and water every night and morning. If it is necessary to keep them a few days longer, this may be done by immersing them in a pickle composed of equal quantities of vinegar, small-beer, and water.

TO PRESERVE MEAT.

The Moors of Africa preserve meat in the following manner : They cut into thin slices, beef, mutton, or camel's flesh, and after salting them well, suffer them to lie in the pickle twenty-four hours. The meat is then removed from the tubs or jars, and then put into others filled with fresh water ; and when it has remained there a night, it is taken out, and hung upon ropes to dry in the sun and air. When thoroughly dried and hard, it is cut into pieces two or three inches long, and thrown into a pan, or cauldron, which is kept ready, with boiled oil and suet sufficient to cover it ; thus it is boiled, till it be very clear and red on cutting it, when it is again taken out and set to drain. After having undergone this process, it stands to cool, while the jars are getting ready for storing it ; at the same time, the liquor in which it was fried is poured upon it, and as soon as it is thoroughly cold, the vessels are closely stopped. Preserved in this manner, it will remain hard, and keep two years ; indeed, the hardest is considered the best and most palatable. It is brought to table, sometimes fried with eggs and garlic, or stewed with a little lemon-juice poured on it.

When meat is to be preserved a long time, the brine should consist of a saturated solution of salt. A common direction in books is, that the brine should be so strong that an egg will float in it ; but this is a very imperfect test of its strength, for an egg will not only float in a saturated solution, but in one that has double its measure of

common water added to it ; and from observing this imperfect direction, and making their brine too weak, some persons have failed in preserving their meat. Indeed, it would be advisable that the brine should not only be as strong as it can be made, but that a little more salt should be added that can be dissolved ; because, as the meat is constantly giving out its juices up to a certain period, these juices will lower the strength of the brine below the preserving point ; but if there is an excess of salt present, it will dissolve in the juices given out, and thus the strength of the brine will be kept up. A saturated solution of salt is made by dissolving seven ounces and a half of salt, in an imperial pint of water at 60°. When the meat has lain sufficiently in the brine, it is to be taken out, and packed in casks with dry salt between each layer of meat. *A strong brine or pickle* for preserving meat a long time, or for sea voyages, is made by boiling down the solution ; and the rule is, that the water should be evaporated till the salt begins to crystallize, which is known by a thin film of salt beginning to form on the surface when the liquid is on the fire ; the water is then completely saturated.

The same pickle may be used repeatedly, provided it be boiled up occasionally, with additional salt to preserve its strength, as this is diminished by the combination of part of the salt with the meat, and by the dilution of the pickle by the juices extracted. In consequence of boiling, the albumen, which would cause the pickle to spoil by changing very soon, is coagulated, and rises to the surface in the form of scum, which must be carefully removed.

PORTABLE SOUP.

Portable soup comes into this class of substances preserved as food by drying. The principles upon which it

is made are the same with that of manufacturing glue. The gelatine of meat is dissolved by boiling water ; and the water being afterward evaporated, the gelatine is left in a solid state. Any fresh lean meat will answer for this purpose, but the fat should be cut away. Portable soup, made in large quantities, forms a valuable acquisition to the traveller, and to those engaged in naval and military duties.

Dr. Kitchner endeavoured to ascertain, by careful investigation, the best and cheapest mode of making this soup. The legs and shins of beef he found to answer better than other meat, both in regard to quantity and flavor. If expense is not a principal object, the addition of other meat, and the trimmings of poultry and game, together with lean ham, in the proportion of one pound to eight of beef, will greatly improve the flavor. Made without ham, the price of this essence in the shops is from 10s. to 12s. the pound ; made in a private kitchen, Dr. K. estimates the expense to be scarcely more than 3s. 6d. per pound. One ounce of this (2d.) will make a pint of broth ; double that quantity, with the addition of either thickening or flavoring ingredients, the same quantity of soup.

To make Portable Soup.—Take a leg or shin of beef, weighing about ten pounds ; have it from a bullock recently killed ; break the bones, and put it into your soup-pot ; just cover it with water, and set it on the fire to heat gradually, till it nearly boils. It should boil for nearly an hour. When scum rises, it should be carefully skimmed off, and a little cold water be poured in once or twice, which will cause more scum to rise on the surface, which must be again removed. When the scum has ceased rising, let it boil for eight or nine hours, and then strain it through a hair-sieve into a stone jar, and place it where it will quickly cool. The next day, after removing every particle of fat, pour it quite through a

very fine sieve, or tamis, into a stew-pan, taking care that none of the settlings at the bottom go into the stew-pan. After adding a quarter of an ounce of black peppercorns, let it boil briskly, the pan uncovered, until it begins to thicken, and is reduced to about a quart. All scum that rises must be removed as in the preceding process, but without adding water to it. When it begins to thicken, withdraw it from the brisk fire, and place it where it can continue to boil gently, until it becomes a very thick syrup. Great care must be taken to prevent it burning, which would in one instant destroy the whole. Pour out a little in a spoon, to ascertain if it will jelly. If it does not, then boil it longer, and at length pour it into a little potting jar, about an inch and a half in depth and perfectly dry. These pots Dr. Kitchner recommends, if the soup is intended for home consumption, and is sufficiently concentrated to keep for six months. If to be longer preserved, it may be put into bladders such as are used for the german sausages: or it may be dried in the form of cakes, by pouring it at first into a dish until cooled. When cold enough to turn out, weigh the cake, and divide it into pieces of an ounce, or half an ounce each; place them in a warm room, and turn them twice a day for a week or ten days, by which time they will be thoroughly dried. If kept in a dry place, they may be preserved for years.

Portable soup, besides being very serviceable to travellers, is also very convenient in country places, where it is difficult to have a supply of fresh meat, for making extempore broths, sauces and gravies for hashed or stewed meat, etc. When they are to be used, half an ounce is put into a vessel with half a pint of boiling water, which is to be covered and set upon hot ashes, or put into a water-bath, for a quarter of an hour, until the whole is dissolved. If seasoning of roots or herbs is required, they may be

added. Boil an onion, with or without a bit of parsley and sweet herbs, and a few corns of allspice, or other spice, in the water you melt the soup in, and which may be flavored with mushroom catsup, essence of sweet herbs, or of celery, or anything else that is customary.

As this portable soup is easily made, and is not only convenient in a family, but economical, since no more need be dissolved than is wanted, it is recommended that it be made at home, as affording the only certainty of the goodness of the materials; it may thus be made for less than half the price of that at which it is sold.

“GELATINE BRUT FIN.”

A preparation is made in France, called “*Gelatine brut fin*,” from bones; the ends being cut off, and the bones cut down the middle to remove the fat, they are steeped in diluted muriatic acid for about ten days, which dissolves the solid part and leaves the gelatine. The acid being poured off, they are soaked afresh in weak acid for a day and a night, and then steeped in water some hours, renewing it five or six times until all the acid is washed out; and finally, they are steeped in a very weak solution of sub-carbonate of soda, to neutralize what acid may yet remain. 100 lbs. of bones yield about 25 lbs. of gelatine. The gelatine is then dried and cut in the form of dice, and is used for making soup, for which it keeps better than the cakes of portable soup. This kind of prepared gelatine is made in England, and may be had in the London shops; but we wish our readers to observe, that we merely mention the fact, without recommending the substance.

TO PICKLE SALMON.

Salmon is pickled with vinegar in the following manner: The fish ought to be perfectly fresh and in good

condition. It must be cut into pieces of convenient size, but the scales are not to be taken off. Make a strong brine, and boil the fish in just so much as will cover it, with some whole pepper and allspice, but take care not to over-boil. When sufficiently done, lay the fish on a slope to drain off the superfluous liquor. When quite cold, pack it up close in kitts, a kind of small shallow casks, and pour over them some of the brine, together with some good vinegar; let this stand for a day; and then, to make them lie close, strike the kitt with a mallet, and pack them down as close as possible; then head the kitts. Some boil in the liquor bay-leaves, fennel, and tarragon. The kitts should not be opened till wanted for use; the fish will keep after that a fortnight. The goodness of pickled salmon is known by the brightness of the scales, and their adhering fast to the skin, the firmness of the flesh, and its fine rose color. If stale, or beginning to spoil, it is extremely unwholesome and altogether unfit for food.

TO PICKLE OYSTERS.

Put the oysters into a stew-pan with their liquor, over the fire; do not let them boil, but take them off when they are white and firm; remove the beards; strain the liquor, and put it with twice its quantity of good vinegar into a stone jar; to this may be added some mushroom catsup, some bay-leaves, tarragon, and shallots. Stew the whole in an oven for three hours; when cold, put them into a jar, stewing in with them a little pounded sugar, some pepper-corns, allspice, and bay-leaves. Fill up the jar with vinegar, and cork and secure it with bladder.

POTTED BEEF.

Beef potted to taste like venison, is made of the flank of beef, the inside skin of which must be pulled off, and the meat slashed across, especially in the thickest parts. It

must lie for six hours in pump water. It must then be salted with saltpetre, of the bulk of an egg, mixed with two pounds of common salt. White wine vinegar is to be sprinkled upon it, and it must lie for three days, turning it once a day. The brine is then washed away with claret. The seasoning must consist of cloves, mace, nutmeg, white and red pepper; a quarter of an ounce of each, beaten together with savory, thyme, sage, and the rind of lemon, shredded together, and then well-rubbed into the cuts, slashes, and insides. It must be afterward bound with tape, the claret poured over it, the skins laid upon it, and baked in a long pot.

TO PRESERVE BUTTER.

Butter may be preserved without salt, by incorporating it with honey, in the proportion of an ounce to a pound of butter. This has an agreeable taste, will keep for years, and might be useful on long voyages; but as the proportion of honey is considerable, it may not agree with some constitutions.

TO PRESERVE EGGS

However compact and close the shell of an egg may appear, it is nevertheless perforated with a multitude of small pores, too minute to be seen by the unassisted eye. The effect of these, however, is evident, by the daily decrease of the moisture of the egg, through evaporation, and the air taking its place, which operates in effecting its alteration. From the time of its being laid, when the egg is quite full, a fluid is constantly perspiring through the perforations of the shell, which occasions its decay; and this proceeds more rapidly in warm than in cold weather. Although an egg quite fresh is proverbially "full," yet in all stale eggs there is some vacancy, which is in proportion to the loss they have sustained through

evaporation. If the end of a fresh egg be applied to the tongue, it feels cold, but that of a stale egg feels warm, because the white of the former being in contact with the shell, abstracts the heat from the tongue more rapidly than the air bubble in the latter.

To preserve eggs completely fresh, therefore, this transpiration must be stopped, and the egg kept full. Any kind of varnish will answer this purpose, but the most convenient substance is mutton suet, or a mixture of that and beef suet. This is rubbed over the eggs; the most effectual method is to dip the eggs into this melted in a pipkin; olive oil will also answer. They should be afterward wiped, to take off the superfluous fat or oil, which might become rancid, for all that is wanted is to stop up the pores. After this anointing, the eggs should be set on end with the small end uppermost, wedged close together, one layer over another in bran, the containing box being closely covered up. Laid upon the side, the yolk will adhere to the shell. They thus come into use, at the end of a considerable time, in a state almost equal to new laid eggs. They should be done over with the suet as soon as possible after they are laid. Some cover them with a solution of gum arabic, which is preferable to fat. Eggs are sometimes packed in bran, meal of any kind, wood-ashes, salt, or charcoal powder; but these substances are not nearly so effectual alone, as when the eggs are first done over with the above-mentioned substances, as they can have but a slight influence in preventing the transpiration we have mentioned. Eggs should never be suffered to continue in the nest above a day, since the warmth which they receive in it from the hen is inimical to their keeping. It should be observed, that on the third day after the hen begins to sit on her eggs to hatch them, they are rendered unfit for use.

It is said that the dealers in eggs immerse them for a moment in oil of vitriol, diluted with water, as a means

of preservation. This is not improbable, for the acid would dissolve a little of the calcareous matter of the shell, forming with it a sulphate of lime, which would be deposited and fill up the pores.

Another mode of preserving eggs is to plunge them for five minutes in water heated to 140° ; they are then taken out, oiled or rubbed with suet, and packed in sawdust or charcoal powder; they will keep thus for a year or two. Some boil them for one minute, which preserves them a long time, probably by coagulating the portion of the albumen next to the shell. If boiled hard they will keep many weeks without other preparation.

Eggs are very liable to absorb the flavor of any substance they are kept in contact with, and therefore care should be taken not to pack them in anything that might communicate a flavor; mahogany shavings will impart to them a peculiarly disagreeable taste; and musty straw will likewise give them an unpleasant flavor.

PRESERVATION OF MILK.

It is well known that it will not remain fresh for many hours in warm weather; the principal care must therefore be to keep it in as cool a place as possible; stone shelves are preferable to wood; and a room connected with an ice-house is particularly convenient. The milkmen of Paris, to prevent their milk from turning sour, sometimes use a little sub-carbonate of soda, which unites with the acid as it forms; provided too much soda is not employed, this will have no injurious effect; a little calcined magnesia will answer the same purpose.

Milk boiled with sugar will keep some time.

PRESERVING ROOTS, FRUITS AND VEGETABLES.

It had been long a desideratum to preserve fruits by some cheap method, yet such as would keep them fit for

the various culinary purposes, as making tarts and other similar dishes. The expense of preserving them with sugar is a serious objection; for except the sugar is in considerable quantity, the success is very uncertain. Sugar also overpowers and destroys the sub-acid taste so desirable in many fruits: those which are preserved in this manner are chiefly intended for the desert.

In gathering fruit for winter store, great care should be taken not to bruise it, nor to break the skin; the injured parts soon rot and spoil the sound fruit in contact with it. To prevent this, gardeners even have instruments for gathering the most valuable kinds of fruit from the trees, without touching it with the hand. Fruit intended to be stored, should never be beat off the trees, or by shaking the branches till it drops, if this can be avoided. They are best gathered on a fine day, when they are most likely to be dry; or if this be done on a wet day, they should be dried in the sun, if possible; the more delicate kinds do not bear to be wiped, as this rubs off their bloom, which, when allowed to dry on some fruits, constitutes a natural varnish, closing up the pores, and preventing the evaporation of the juices.

The usual mode with apples and pears has been, to lay them first in heaps for a fortnight or more, covered with mats or straw, to *sweat*, as it is called; that is, by a very slight fermentation to discharge some of their juice, after which the skin contracts in a slight degree; but this is now generally disapproved of, and it is thought best to carry them at once to the fruit-room, where they are laid upon shelves covered with white paper, after wiping gently each fruit. The fruit-room should be dry and well-aired, but should not admit the sun. The finer and larger kinds should not be allowed to touch each other, but should be kept separate; for this purpose a number of shallow trays should be provided, supported above each

other on racks or stands. There should be the means of warming the room in very cold frosty weather.

Some kinds of apples and pears are gathered before they are quite ripe, and the ripening is completed after they are gathered; this is termed the *maturation* of the fruit, and it appears to be a curious and interesting natural process. This subject has been well examined by M. Couverchel in a paper inserted in the "Annales de Chimie." He conceived that the acid and mucilaginous matters of fruit nearly ripe, are converted into sugar by a process which is perhaps chemical, and which has been called the saccharine fermentation. Had such fruit remained on the tree until it was quite ripe, this fermentation would soon have passed into the putrefactive stage, and then the fruit could not be preserved without extraordinary means, such as extreme cold, sugar, etc.

In general, the apples and pears of autumn should be gathered eight days before they are ripe, and matured in this way. In fact, there are some fruits that are never fit for eating, except they are treated in this manner. The principle of life remains in vegetables very differently from what it does in animals; for a branch cut from a tree does not die immediately, but will grow, on being planted, into a new tree. Flowers that have been cut off when only buds, blow on being placed in water; and the head of a carrot, cut off a little below the top of the root, if placed in a shallow basin of water, will put out leaves, and become a handsome ornament. Mr. Knight is of opinion, that in the case of the maturation of fruit, it still continues to be in a living state, though taken from the tree, and that the saccharine matter is formed in the same manner as it would if growing. Pears kept for maturation may be packed carefully with dry moss, bran, or sand dried in an oven, in baskets lined with stout paper. They will keep in this way through the winter.

Choice apples and pears are sometimes wrapped singly in paper, and put into glazed jars, with covers. When there is no fruit-room, a cool cellar may be used, or they may be kept in baskets packed in dry straw, and kept in a dry cool room.

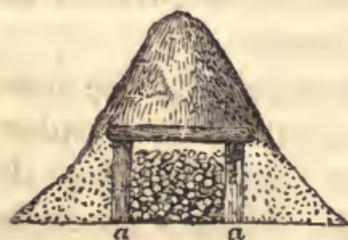
The free access of the atmosphere being one of the circumstances essential to the decomposition of animal and vegetable matter, it is obvious that the exclusion of it must prevent this effect from taking place, and that consequently, if such substances are completely kept from the contact of air, they cannot change, or at least in a very inconsiderable degree. At a certain depth below the surface of the earth, the temperature does not vary, summer nor winter, and it is never so cold there as to freeze. This fact has been taken advantage of in the preservation of provisions. In many parts of Europe, vegetables, such as potatoes, turnips, carrots, onions, etc., are preserved for one or more years, by burying them in deep pits in a clay soil, which they burn hard before using, or even in a dry sandy soil. Caves form excellent cellars, on account of the equality of their temperature.

To preserve green gooseberries, currants, or green peas, in this manner, let the fruit be gathered in dry weather, or if not, let them be dried in the sun; cut them from the stalks with scissors, and take care that they are not in the least wounded, and that no spoiled or bruised ones are mixed with the rest. Drop them gently into dry, wide-mouthed bottles. Cork the bottles and rosin over the corks. Make a trench in the garden at least two or three feet deep, and bury the bottles in it, placing the corks downward, to keep them from the frost. Should the frost in winter be severe, a quantity of litter from the stable should be laid over the place, where they have been put. If the bottles are placed in a very cool cellar, the fruit will keep tolerably well. By plunging the bottles after they

are corked, for a few minutes in hot water, the berries will keep better.

It is sometimes safer to take up certain vegetables before hard frosts set in, where the cold is severe, as they may be preserved by artificial means, even by laying on a floor inaccessible to the frost; whereas, if left in the ground, they would have been frozen and lost. This, in some situations, is the case with cabbages, lettuce, greens, endive, leeks, cauliflowers, etc. They should be carefully removed in dry weather, without injuring the roots too much. Vegetables only a little touched by the frost, may be recovered by soaking in cold water.

Potatoes are difficult to preserve for many years, and hence they are considered less to be depended upon than wheat against years of scarcity; but as they are seldom required to be kept longer than during the winter and spring seasons, with proper preparations, this is not difficult.



When preserved in considerable quantities by the farmers, several methods are put in practice in different districts; but the principle appears to be merely to keep them dry, and so protected that the frost cannot reach them.

A very effectual method was employed by Mr. Young. He constructed a house capable of holding seven hundred bushels of potatoes, and made it of fir posts, *a, a*, (see cut,) having the interstices filled in with watling; against the sides of this he laid straw, and against that, exteriorly, he put earth rammed tight six feet thick at the bottom, and eighteen inches at the top. The roof was flat, and he placed on it a stack of beans. The beans kept out the weather, and yet admitted any steam that rose from the potatoes, and which if it did not escape, would have rotted them. A

roof of thatch would have answered. In some parts of the country, they are kept during the winter in pits in the ground, where the soil is dry and light, to the depth of three or four feet, lining this with straw, covering them with earth to protect them from the frost, and the whole thatched. Roots, as potatoes, turnips, carrots, etc., should never be divested of the earth adhering to them when taken out of the ground, as it tends to preserve them fresh, the little fibres by which it is retained continuing still to draw some nutriment from it; and if these are broken, the juices escape through the broken surfaces. They should be wounded as little as possible.

Where the quantity is not considerable, potatoes may be kept in a cellar under ground, where the temperature is pretty equal and never very low, and covered with straw or mats; but in spring, they should be frequently examined and turned over; those which are decayed should be removed, and the shoots broken off closely, if any of them have sprouted.

Carrots and *turnips* may be preserved through the winter, by taking them up and keeping them in pits, or in a dry cellar in sand, secure from frost. The heads and roots should not be cut off.

Onions, when pulled up, should be laid thinly on a gravel walk, and turned every day to dry. When thoroughly dried, they are usually strung together by the tails, and hung up in a dry, well-aired place, till wanted for use.

Cabbages are, in some places, preserved all winter by burying them in the ground, out of the reach of the frost.

PRESERVING FRUITS AND VEGETABLES BY MEANS OF SYRUP.

A great number of fruits may be preserved, in their natural state, in a fluid transparent syrup of a proper

consistence, that penetrates into every part of the fruit. The method of effecting this requires considerable care; for if the solution of sugar is too weak, in consequence of its tendency to ferment, it will quickly become sour if kept in a temperate degree of heat; such a solution therefore, is not calculated to prevent the natural fermentation of vegetable juices; and if the syrup be too much concentrated, the sugar crystallizes, and thus spoils the fruit.

Proper strength of syrup.—It has been ascertained, that a solution of sugar, prepared by dissolving two parts of doubled-refined sugar in one of water, and boiling this a little, affords a syrup of the right degree of strength, and which neither ferments nor crystallizes. This appears to be the degree called *smooth* by the confectioners, and is proper to be used for the purposes of preserving fruits.

The syrup employed should sometimes be clarified, which is done in the following manner: Dissolve two pounds of loaf-sugar in a pint of water; add to this solution the white of an egg, and beat them well. Put the preserving pan upon the fire with the solution; stir it with a wooden spatula, and when it begins to swell and boil up, throw in some cold water, or a little oil to damp the boiling; for as it rises suddenly, if it should boil over, it would take fire, being of a very inflammable nature. Let it boil up again, then take it off, and remove carefully the scum that has risen. Boil the solution again, throw in a little more cold water; remove the scum, and so on for three or four times successively; then strain it. It is considered to be sufficiently boiled, when some taken up in a spoon pours out like oil; and when a thin skin appears on blowing upon the syrup, it is judged to be completely saturated. The heat when sufficiently boiled, and of the proper strength, is 221° . In this manner the syrup will become quite transparent. It is scarcely necessary to say, that if a greater quantity of syrup is wanted, the

proportions of sugar and water must still be the same. Instead of loaf-sugar, some have used only brown sugar, which they have clarified to do as well as refined sugar, by mixing with the solution some pounded charcoal, which is boiled with the sugar: by straining repeatedly this black mixture, the charcoal is kept back, and the sugar becomes colorless.

In the confectioner's art there is a great nicety in proportioning the degree of concentration of the syrup very exactly to each particular case; and they know this by signs, and express it by certain technical terms. But to distinguish these properly, requires very great attention and considerable experience.

The principal thing to be acquainted with is the fact, that in proportion as the syrup is longer boiled, its water will become evaporated, and its consistence will be thicker. Great care must be taken in the management of the fire, that the syrup does not boil over, and that the boiling is not carried to such an extent as to burn the sugar.

We give the following degrees of boiling the syrup, as distinguished by the professed confectioner; though, perhaps, such nicety is seldom attained in domestic practice. The first degree is called the *thread*, which is subdivided into the little and great thread. If you dip the finger into the syrup, and apply it to the thumb, the tenacity of the syrup will, on separating the finger and thumb, afford a thread which shortly breaks; this is the *little thread*. If the thread, from the greater tenacity, and consequently, greater strength of the syrup, admits of a greater extension of the finger and thumb, it is then called the *great thread*. 2nd. By longer boiling you obtain the *pearl*, which is denoted by the thread admitting of being drawn without breaking, by the utmost separation of the thumb and finger; this makes candied sugar. 3rd. By further boiling, you obtain the *blow*, which is known by dipping a

skimmer with holes into the syrup, and blowing through them ; if bubbles are perceived, what is termed the blow is obtained. 4th. The *feather* implies more numerous bubbles ; and then the sugar will fly off like flakes while the skimmer is quickly tossed. 5th. The *ball* admits, by additional boiling, the syrup to be rolled into a ball, previously dipping the finger into water, then into the syrup, and subsequently into the water again. 6th. The *crack* denotes that it does not stick to the tooth, and cracks when broken. To know when it has attained this degree, dip a teaspoon or skewer into the sugar, and let it drop to the bottom of a pan of cold water ; if the sugar remain hard, it has attained the degree termed *crack*. 7th. The last degree is termed the *caramel*, beyond which a partial burning, or rather carbonizing, of the syrup will take place. This is a very elegant covering for sweetmeats. We should observe, that ornamental confectionary can seldom be executed well but by the hands of professed confectioners.

Pulpy fruits are preserved whole in syrup, as follows : The fruits that are the most fit for this mode are, *apricots, peaches, nectarines, apples, greengages, plums of all kinds, and pears*. As an example, take some apricots not too ripe ; make a small slit at the stem end, and push out the stone ; simmer them in the water till they are softened, and about half done, and afterward throw them into cold water. When they have cooled, take them out, and drain them. Put the apricots into the preserving pan, with sufficient syrup to cover them ; let them boil up three or four times, and then skim them ; remove them from the fire, pour them into an earthen pan, and let them cool till next day. Boil them up three days successively, skimming each time, and they will then be finished, and in a state fit to be put into pots for use. After each boiling, it is proper to examine into the state of the syrup when cold ;

if too thin, it will bear additional boiling; if too thick, it may be lowered with more syrup of the usual standard. The reason why the fruit is emptied out of the preserving pan into an earthen pan, is, that the acid of the fruit acts upon the copper of which the preserving pans are usually made. From this example, the process of preserving fruits by syrup will be easily comprehended. The first object is, to soften the fruit, by blanching or boiling in water, in order that the syrup, by which it is preserved, may penetrate through its substance. In proportion as the fruit is unripe or hard, it will require to be boiled three or four times in the syrup; when it is of a softer texture, the syrup drained off and poured on the fruit in its boiling state, will be sufficient, as it is important to retain the shape and appearance of the fruit as perfect as possible.

Fruits preserved by syrup without heat.—Many fruits when preserved by boiling, lose much of their peculiar and delicate flavor, as for instance pine-apples; and this inconvenience may, in some instances, be remedied by preserving them without heat. Cut the fruit in slices, about one-fifth of an inch thick; strew powdered loaf-sugar an eighth of an inch thick in the bottom of a jar, and put the slices on it. Put more sugar on this, and then another layer of the slices, and so on, till the jar is full. Place the jar with the fruit up to the neck in boiling water, and keep it there till the sugar is completely dissolved, which may take half an hour, removing the scum as it rises. Lastly, tie a wet bladder over the mouth of the jar, or cork and wax it.

Dry confects, or fruits preserved by boiling in syrup and drying afterward.—Any of the fruits that have been preserved in syrup may be converted into dry preserves, by first draining them from the syrup, and then drying in a stove or very moderate oven; adding to them a quantity

of powdered loaf-sugar, which will gradually penetrate the fruit, while the fluid parts of the syrup gently evaporate. They should be dried in a stove or oven, on a sieve, and turned every six or eight hours, fresh powdered sugar being sifted over them every time they are turned. Afterward, they are to be kept in a dry situation in drawers or boxes. Currants and cherries preserved whole in this manner, in bunches, are extremely elegant, and have a fine flavor. In this way it is also that orange and lemon chips are preserved.

Marmalades, jams, and fruit pastes.—The preserves which bear these names are of the same nature, and are now in very general request: they are prepared without difficulty, by attending to a few directions; they are little expensive, and they may be kept without spoiling for a considerable time.

Marmalades and jams differ a little from each other: they are preserves of a half liquid consistence, made by boiling the pulp of fruits, and sometimes part of the rinds, with sugar. The appellation of marmalade is applied to those confects which are composed of the firmer fruits, as pine-apples, or the rinds of oranges; whereas jams are made of the more juicy berries, such as strawberries, raspberries, currants, mulberries, etc. *Fruit pastes* are a kind of marmalades, consisting of the pulp of fruits first evaporated to a proper consistence, and afterward boiled with sugar. The mixture is then poured into a mould, or spread out on sheets of tin, and subsequently dried in the oven or stove, till it has acquired the state of a paste. From a sheet of this paste, strips may be cut and formed into any shape that may be desired; as knots, rings, etc.

In more juicy fruits, the pulp is boiled till much of the aqueous part is evaporated, before the sugar is added. This is best performed in broad shallow vessels; but when the pulpy matter begins to get thick, great care is

necessary to prevent its burning. This accident is almost unavoidable if the quantity be large, and the fire applied, as is often the case, immediately under the pan: but it may be entirely avoided by putting the pulpy mass, when thickened to the consistence of a syrup, in shallow earthen pans, and placing them in an oven with its door open, moderately heated: in this manner the heat will be applied equally to every part. A still better plan, but more tedious, is to place the vessel containing the pulp in another vessel containing boiling water, which is called the water bath. The application of steam, by means of what is called the *steam preserving pan*, is the best contrivance for making marmalades, jams, and all other culinary preparations which are liable to become injured by a degree of heat exceeding that of boiling water.

Orange marmalade.—Scoop out the pulp of Seville oranges into a hair sieve, beat it, and press the juice through into a pan below; boil the skins in water in the preserving pan, till they are tender; then take out the white part, and cut them into small strips: add this to the juice, and to each pound of the fruit add a pound of clarified sugar, and boil the whole for about half an hour to the degree called the *feather*. Take it off, stir and mix it well, and boil again till it hangs to the spoon, being the degree called the *crack*. Take care not to boil it too much, but watch it carefully, as the proper consistence is important. When right, pour it into pots; cover them with paper dipped in brandy, and tie a bladder over it. Common oranges are not equal to the Seville, but they will make very good marmalade. If the sugar is broken in pieces, and boiled with the fruit, without being first clarified, it will do; but then it must be well skimmed as it boils. Marmalade should be made between February and the end of March, as the Seville oranges are then in their best state.

Scotch orange-chip marmalade, according to Meg Dods.—Take equal weight of fine loaf-sugar and Seville oranges ; wipe and grate the oranges, but not too much. (The outer grate, boiled up with sugar, will make an excellent conserve for rice, custard, or batter puddings.) Cut the oranges the cross way, and squeeze out the juice through a small sieve ; scrape off the pulp from the inner skins, and pick out the seeds ; boil the skins perfectly tender, changing the water to take off part of the bitter. When cool, scrape the coarse, white, thready part from the skins, and trussing three or four skins together for dispatch, cut them into narrow chips ; clarify the sugar, and put the chips, pulp, and juice to it ; add, when boiled for ten minutes, the juice and grate of two lemons to every dozen of oranges. Skim and boil for twenty minutes ; pot, and cover when cold.

Quince marmalade.—Boil some ripe quinces in a small quantity of water till they are tender ; pare the skins off, cut them into quarters, and take out the cores ; stew the parings and cores in some water ; strain this, and add the water to the quartered quinces. Put the whole into a preserving pan, with as much sugar as the weight of the quinces. Boil this till it is of the proper consistence for a marmalade, bruising it with a wooden spatula.

A marmalade may be made in the same manner by using pears, apricots, peaches, pine-apples, or any other fruit of a pulpy nature.

Jams require the same care and attention in the boiling as marmalade ; the slightest degree of burning communicates a disagreeable empyreumatic taste, and if they are not boiled sufficiently they will not keep. That they may keep, it is necessary not to be sparing of sugar.

Raspberry jam.—Pick a sufficient quantity of fresh ripe raspberries, gathered on a dry day ; mash them, and pass them through a wicker sieve ; to one pint of the pulp add

a pound of loaf-sugar, pounded or broken small ; put the whole into a preserving pan over a clear fire. When it begins to boil, skim it well, and stir it for half an hour, taking great care not to let it burn. When done, put it into small pots, cut some pieces of paper round to the size of the pot ; dip them in brandy, and lay them on the jam : also tie another paper over the spot. Some add a little red currant juice to the raspberries ; but this will demand some more sugar : others add a little honey to make it richer.

Strawberry jam and barberry jam are not made in the same manner. The sugar used may first be clarified : add one-sixth of currant juice.

White gooseberry jam.—This is a homely preparation, but very useful where there are children. It is made as the last, only the gooseberries, which should be quite ripe, must be well boiled, until they begin to break. Each pound of fruit requires a pound of sugar ; and the gentle boiling must be continued till the the jam is of the right consistence. Red gooseberry jam is made in the same way.

Currant jam may be made in the same way.

The months when jams and jellies are usually made are June and July. They should be examined in August, to see if there be any tendency to fermentation or any mouldiness ; if so, they must be reboiled and prepared over again. In warm seasons this is very liable to happen.

To preserve damsons for pies.—Take equal weight of fruit and clarified sugar. If any of the damsons are broken, boil them first some time in sugar ; then add the whole quantity of fruit, and boil till it jellies : pot, and tie paper over.

Fruit jellies.—These are compounds of the juices of fruits combined with sugar, concentrated by boiling to such a consistence that the liquid, upon cooling, assumes

the form of a tremulous jelly. Vegetable jelly is a distinct principle existing in fruits, which possesses the property of gelatinizing when boiled and cooled: but it is a principle entirely different from the gelatine of animal bodies, although the name of jelly, common to both, sometimes leads to an erroneous idea on that subject. Animal jelly, or gelatine, is glue; whereas, vegetable jelly is rather analogous to gum, though different from it, and not nearly so nutritious as animal jelly or gelatine. In preparing vegetable jellies, it is necessary to guard against boiling them too long, since this destroys their property of gelatinizing, and they then assume the appearance of mucilage or gum; and this accident is most likely to occur, when the quantity of sugar is too small to absorb the water of the juice. Jellies are most perfect, as to beauty and transparency, when clarified sugar is used: but for ordinary purposes, refined sugar answers very well.

Currant jelly.—The usual method of obtaining the juice is to bruise the currants, and to pass them through a sieve; but then it is apt to be turbid and thick. A better mode is to warm the fruit by steaming it, or by putting it closely covered into a slow oven; the juice will then flow from it without much pressure. Put it now in the preserving pan on the fire to boil, in order to evaporate some of the water; let it boil a quarter of an hour; then take it off, skim it, and pass it through a flannel bag to render it clear; add sugar to it in the proportion of a pound and a half of refined sugar to one pint of the juice, and put this on the fire to simmer very gently, until, by dipping a spoon in the jelly, and again raising it, the jelly becomes stiff: when the boiling is sufficient. Take it now off the fire, and let it stand till the scum has collected on the surface: remove this, run the whole through a hair sieve, and put the clear jelly into pots. When cold, cover the surface with

jelly paper steeped in brandy. What remains on the sieve will do to make pies, or mix with any common jam; and the jelly will be more delicate if no squeezing is employed. A small proportion of raspberries will improve the flavor.

White currant jelly is made in a similar manner; only the finest sugar should be used, and the boiling and straining should be done very carefully, as the color is easily injured. White raspberry juice may be added. The sugar should be high-boiled.

Black currant jelly is generally used medicinally; it is made in the same manner.

Grape jelly.—Spread some of the ripest grapes on straw; at the end of a fortnight, pluck them from the stalks, and boil them for five or six minutes only, in order that the juice may be extracted with ease by pressure; next pass the juice through a sieve, add a quarter of a pound of white sugar to each pound of juice, and boil the whole for half an hour, and afterward set it to cool; in twenty-four hours it will be a fine jelly, useful to invalids.

CHOICE OF MEAT, FISH AND POULTRY.

Beef.—The grain of *ox beef*, when good, is loose, the meat red, and the fat inclining to yellow. *Cow beef*, on the contrary, has a closer grain, a whiter fat, but meat scarcely as red as that of ox beef. *Inferior beef*, which is meat obtained from ill-fed animals, or from those which had become too old for food, may be known by a hard skinny fat, a dark red lean, and, in old animals, a line of a horny texture running through the meat of the ribs. When meat pressed by the finger rises up quickly, it may be considered as that of an animal which was in its prime; when the dent made by pressure returns slowly, or remains visible, the animal had probably passed its prime, and the meat consequently must be of inferior quality.

Veal should be delicately white, though it is often juicy and well flavored when rather dark in color. Butchers, it is said, bleed calves purposely before killing them, with a view to make the flesh white; but this also makes it dry and flavorless. On examining the loin, if the fat enveloping the kidney be white and firm-looking, the meat will probably be prime and recently killed. Veal will not keep as long as an older meat, especially in hot or damp weather; when going, the fat becomes soft and moist, the meat flabby and spotted, and somewhat porous like sponge. Large overgrown veal is inferior to small, delicate, yet fat veal. The fillet of a cow calf is known by the udder attached to it, and by the softness of the skin; it is preferable to the veal of a bull calf.

Mutton.—The meat should be firm and close in grain, and red in color, the fat white and firm. Mutton is in its prime when the sheep is about five years old, though it is often killed much younger. If too young, the flesh feels tender when pinched; if too old, on being pinched it wrinkles up, and so remains. In young mutton, the fat readily separates; in old, it is held together by strong strings of skin.

In sheep diseased of the rot, the flesh is very pale-colored, the fat inclining to yellow, the meat appears loose from the bone, and if squeezed, drops of water ooze out from the grains; after cooking, the meat drops clean away from the bones.

Wether mutton is preferred to that of the *ewe*; it may be known by the lump of fat on the inside of the thigh.

Lamb.—This meat will not keep long after it is killed. The large vein in the neck is bluish in color when the fore-quarter is fresh, green when becoming stale. In the hind-quarter, if not recently killed, the fat of the kidney will have a slight smell, and the knuckle will have lost its firmness.

Pork.—When good, the rind is smooth, and cool to the touch ; when changing, from being too long killed, it becomes flaccid and clammy. Enlarged glands, called kernels, in the fat, are marks of an ill-fed or diseased pig.

Bacon should have a thin rind, and the fat should be firm and tinged red by the curing ; the flesh should be of a clear red, without intermixture of yellow, and it should firmly adhere to the bone. To judge of the state of a ham, plunge a knife into it to the bone ; on drawing it back, if particles of meat adhere to it, or if the smell is disagreeable, the curing has not been effectual, and the ham is not good ; it should, in such a state, be immediately cooked. In buying a ham, a short thick one is to be preferred to one long and thin. Of English hams, Yorkshire, Westmoreland, and Hampshire are most esteemed : of foreign, the Westphalia.

Venison.—When good, the fat is clear, bright, and of considerable thickness. To know when it is necessary to cook it, a knife must be plunged into the haunch ; and from the smell, the cook must determine on dressing or keeping it.

In choosing poultry, the age of the bird is the chief point to be attended to.

An old turkey has rough and reddish legs ; a young one smooth and black. Fresh killed, the eyes are full and clear, and the feet moist. When it has been kept too long, the parts about the vent begin to wear a greenish discolored appearance.

Common domestic fowls, when young, have the legs and combs smooth ; when old, they are rough, and on the breast long hairs are found instead of feathers. Fowls and chickens should be plump on the breast, fat on the back, and white-legged.

Geese.—The bills and feet are red when old ; yellow

when young. Fresh killed, the feet are pliable; stiff when too long kept. Geese are called green while they are only two or three months old.

Ducks.—Choose them with supple feet, and hard plump breasts. Tame ducks have yellow feet, wild ones red.

Pigeons are very indifferent food when they are too long kept. Suppleness of the feet show them to be young; the state of the flesh is flaccid when they are getting bad from keeping. Tame pigeons are larger than the wild.

Hares and rabbits, when old, have the haunches thick, the ears dry and tough, and the claws dry and rugged. A young hare has claws smooth and sharp, ears that easily tear, and a narrow cleft in the lip. A leveret is distinguished from a hare by a knob or small bone near the foot.

Partridges, when young, have yellow legs and dark-colored bills. Old partridges are very indifferent eating.

Woodcocks and *snipes*, when old, have the feet thick and hard; when these are soft and tender, they are both young and fresh killed. When their bills become moist, and their throats muddy, they have been too long killed.

Turbot, and all flat white fish, are rigid and firm when fresh; the under side should be of a rich cream color. When out of season, or too long kept, this becomes a bluish white, and the flesh soft and flaccid. A clear bright eye in fish is also a mark of being fresh and good.

Cod is known to be fresh by the rigidity of the muscles (or flesh,) the redness of the gills, and clearness of the eyes. Crimping much improves this fish.

Salmon.—The flavor and excellence of this fish depends upon its freshness, and the shortness of the time since it was caught; for no method can completely preserve the delicate flavor it has, when just taken out of the water. A great deal of what is brought to London has been packed

in ice, and comes from the Scotch and Irish rivers, and though quite fresh, is not equal to the Thames salmon.

Mackerel must be perfectly fresh, or it is a very indifferent fish; it will neither bear carriage, nor being kept many hours out of the water. The firmness of the flesh, and the clearness of the eyes, must be the criterion of fresh mackerel, as they are of all other fish.

Herrings can only be eaten when very fresh, and, like mackerel, will not remain good many hours after they are caught.

Fresh-water fish.—The remarks as to firmness and clear fresh eyes, apply to this variety of fish, of which there are carp, tench, pike, perch, eels, etc.

Lobsters, recently caught, have always some remains of muscular action in the claws, which may be excited by pressing the eyes with the finger; when this cannot be produced, the lobster must have been too long kept. When boiled, the tail preserves its elasticity if fresh, but loses it as soon as it becomes stale. The heaviest lobsters are the best; when light, they are watery and poor.

Crab and crayfish must be chosen by observations similar to those given above in the choice of lobsters. Crabs have an agreeable smell when fresh.

Prawns and shrimps, when fresh, are firm and crisp.

Oysters.—If fresh, the shell is firmly closed; when the shells of oysters are opened, they are dead, and unfit for food. The small shelled oysters, the Pyfleet, Colchester, and Milford are the finest in flavor. Larger kinds called *rock oysters*, are generally considered only fit for stewing and sauces, though some persons prefer them.

PANADAS.

Meat panada.—Take the meat of a chicken previously cooked, or the inside of a sirloin of beef or of a loin of

mutton, whichever is recommended by the medical attendant; mince it small, and pound it till it will pass through a sieve, when mixed with broth or hot water, which will be according to the state of the patient, more or less rich and nourishing: unless ordered, no other seasoning than a sprinkling of salt should be added. When the panada is prepared, it should be put into an earthen vessel, and placed in a cool situation. A little of it, taken out as it is wanted, should be warmed up in a little panakin. It must be stirred all the time it is on the fire, and served with delicate thin sippets of bread.

Bread panada.—Grate a teacupful of bread, and mix with it some beef or mutton gravy, beating the bread with a spoon till perfectly smooth. Then boil it till it thickens, stirring it all the time it is boiling.

Another recipe for bread panada.—Boil a glass of white wine and the same quantity of water together, adding a little sugar and lemon-peel to it, nutmeg if approved of; but spices are rarely desirable for invalids. Grate a cup of bread crumbs; and when the wine and water boil, pour in the crumbs; stir them together, and boil very quickly until the mixture thickens; take it off the fire and pour it into a basin.

Bread panadas may be flavored with the juice of fruits, such as lemon and orange syrup, etc. Remember always that the ingredients must be boiled together, or they will not form into a jelly.

PUDDINGS FOR INVALIDS.

Light flour Pudding.—Take a spoonful of fine flour, boil a teacupful of milk and mix the flour very smoothly with it. Let it stand till cold, occasionally stirring it, to prevent the flour from settling at the bottom. When cold, add to it the yolk of an egg, well beaten, with a small quantity of salt; tie it up very securely in a buttered

teacup or small pudding basin ; plunge it into a saucepan of boiling water, and let it boil fast for half an hour. It should be just firm enough to stand when turned out of the basin.

Bread Puddings.—Pour a cup of boiling milk on two table-spoonfuls of bread crumbs ; when cold add the yolk of a beaten egg to it, and boil in a basin for a quarter of an hour or twenty minutes. Cinnamon boiled in the milk, or a bruised bitter almond, together with lemon-peel, may be employed as flavoring ingredients.

Arrow-root Pudding is made by mixing a table-spoonful of it in cold milk, then pouring it into boiling milk. It must then be allowed to cool, when the yolk (well beaten) of an egg must be added, and the pudding must be put into a basin and boiled for ten minutes. All puddings for invalids, having eggs in them, should be boiled in preference to being baked. Baking is supposed to render eggs less easy of digestion than boiling.

WEAVING.

Woven cloth is always composed of two sets of threads, or, as the weavers call them, *yarn*, crossing each other at right angles. One set extends the whole length of the web or piece of cloth, and is called the *warp* ; the other set runs from side to side of the web, or across the cloth, and is called the *woof* or *weft* ; the latter is not a succession of different threads, but one continued thread through the whole piece of cloth ; it passes alternately under and over each thread of the warp, until it arrives at the outside one, or edge of the web ; it then passes round the edge, and returns back over and under each warp thread as before, but so that it now goes under those threads which it went over before, thus firmly knitting together the woven tissue. The outside yarn of the warp, round which the weft doubles, is called the *selvage* (*self-edge*.)

and cannot be unravelled without breaking the web. This structure of cloth is easily seen, by examining a piece of linen or calico with a magnifying glass, (see cut, A,) and may be observed on a large scale in matting, which is woven of coarse grass, or similar substances.



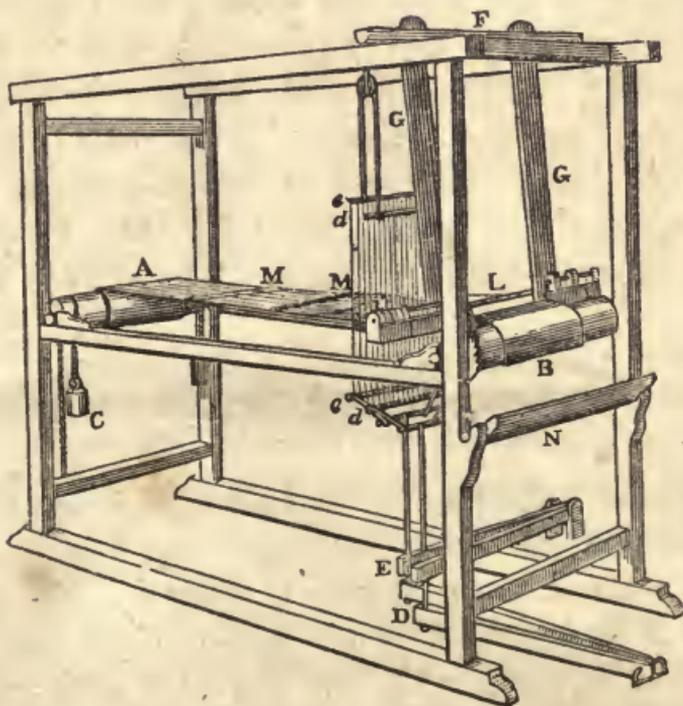
Indeed, some kind of matting made of the fibrous parts of plants, as the stalk, such as the rushes and straws, was probably the first kind of cloth invented by rude and uncivilized nations; and the art of spinning threads from fine fibres was probably a refinement upon this, which led to the weaving of what we, at the present time, term cloth. Some nations are still ignorant of the art of weaving; for the cloth made in Otaheite, where it was first discovered by Captain Cook, was made by merely cementing vegetable fibres together, and was very analogous to our paper; and the Tartars make cloth by merely felting wool.

When the process of spinning threads from the delicate and short fibres which animals afford was discovered, the weaver was furnished with a material superior to any fibres in their simple state, and the foundation was laid of the art of producing woven cloth. When, and by whom, that discovery was made is not known; but it appears to have happened early in the history of mankind. The cultivation of flax was practiced by the ancient Egyptians, and it is recorded that Pharaoh was arrayed in vestments of fine linen. The Hindoos have made cotton cloth from time immemorial, and the Hebrews were also in possession of the arts of weaving, dyeing, and embroidery.

Weaving was introduced into Britain by the Romans along with other arts of civilization; but, from various causes, so little did our British ancestors profit by the example which had been thus set, that for several ages a

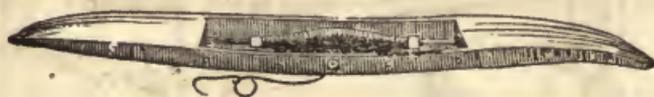
great part of their wool was exported to the Low Countries, where weaving had been successfully practiced, and brought back in the form of cloth. At so late a period as 1331, this art was so little understood in England, that the arrival of two weavers from Brabant is recorded in the chronicles, among the important events of that time. But it was the religious persecution under the Duke of Alva, and the revocation of the edict of Nants, that occasioned a great number of Flemish weavers to take refuge and settle in this country.

Weaving is performed by the aid of a machine called a loom, and the simplest kind, or common looms, vary but little as to their general structure, whatever may be the nature of the fabric they are intended to make ; the chief difference in those for weaving silk or wool, consisting in the greater stability and strength of the latter, on account of the greater coarseness and elasticity of the fibres and the thickness of the cloth woven. Great im-



provements have been made of late in looms, particularly in weaving cottons, muslins, and silks; nevertheless, the old-fashioned common loom is still employed, particularly in Spitalfields and other places, for weaving plain silks.

The first operation in weaving is to extend the warp yarn in parallel lines. This is effected by means of a contrivance called a *warp-mill*; and it is then rolled carefully round a thick roller in the loom, *A*, called the *warp-beam*, having a weight, *c*, suspended from it to keep the warp stretched. From this the warp, *m m*, forming the length of the piece, is stretched to another roller in the loom, called the *cloth-beam*, *B*, before the cloth is wound upon it when completed. Every thread of the warp between the two beams passes through loops in two sets of vertical threads, stretched in frames called *hiddles*, *d d* and *e e*, which are connected by strings at bottom with two treadles, *D* and *E*, to be pressed up and down by the weaver's feet. The use of these treadles is to separate the threads of the warp, by raising and depressing each thread alternately, and thus making way for the weft to pass through; the two treadles being so united by a rope and pulley, that the depression of one must cause the raising of the other. The weft is driven from one side to the other through this space, called the *shed*, by means of a *shuttle* thrown from the hand. The shuttle is a small



box pointed at both ends, and contains a small bobbin of cane, called the *quill*, having the weft wound on, and which runs on as the shuttle is thrown. No sooner is a thread of weft thrown by the motion of the shuttle, than it is driven up close to the last thread of weft by the blow of a comb-like apparatus, called a *batten*, *L*, which con-

sists of a long narrow frame, with a number of slit pieces of reed, cane, or wires, arranged perpendicularly, and so close that every thread of the weft passes through two of them : this batten is suspended in a horizontal position by two vertical laths, which are movable, like a pendulum, from a centre position at the top of the loom, F. The weaver placed on the seat, N, lays hold of this batten, and by pulling it toward him forcibly, he strikes the last thrown thread of weft up to the cloth that is forming. When a certain number of threads of the weft are thus thrown by the shuttle, and brought up close by the batten and reed, so much cloth is made, and the cloth-beam is turned round to wind it up ; this beam is prevented from going back by a ratchet wheel and click fixed on the end. Thus the operation in working the loom for weaving plain cloth, consists of three simple movements : First. Opening the thread, or separating the threads of the warp alternately to admit the shuttle, which is effected by pressing the treadles that move the heddles. Second. Throwing the shuttle by hand to form the weft. Third. Pulling the batten and reed to strike home the weft, and again pushing it back to the heddles.

The fineness, or rather the closeness of texture in cloth, depends upon the number of laths or *dents* which the reed contains within a given space, and which, of course, determine the number of threads of warp in the same space. The yarn of the weft is always somewhat finer than that of the warp, and the number of shoots of it in a given space must consequently always exceed the number of threads of warp in a similar space ; that is to say, a square inch of cloth must contain a greater number of threads of weft than of warp.

The perfection of weaving depends very much upon stretching the warp exactly parallel, and likewise on rolling them with great regularity upon the yarn-beam. It

is necessary, also, that the weaver should exert the same force in every stroke of the reed frame, in order to make every part of the cloth equally compact.

Previous to warping, the yarn must be prepared by sizing and starching, called *dressing*, in order to cement all the loose fibres, and thus render it smooth, firm, and strong; and the weaver suspends his operation, from time to time, in order to apply the dressing to his warp. The weft of muslins and thin cotton goods is generally woven into the cloth in a wet state, by which the fibres of the cotton are rendered smooth and parallel, the effect of which is similar to dressing the warp. The operations of hand-loom weaving are simple and soon learned, but it requires much practice to perform these with dexterity.

THE END.

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