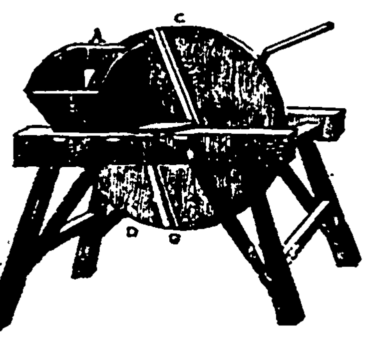
Turnip Slicer.

Various machines have been constructed for this purpose. The most convenient perhaps, and the most expeditious in its operation, is that formed by means of knives placed upon a fly-wheel, and made by each revolution, to cut slices from the turnip or other roots. The parts to be cut are placed in a box open at the top and one of the sides. A large wheel, covered with boards is set upon a frame-work, in such a manner as to cover the open side of box or hopper, so that, when the roots are put into it, they press upon the side of the wheel. In the wheel are placed two knives, at equal distances from each other, and extending nearly from the centre to the circumference. At every revolution of the wheel, each of these knives make a stroke upon the roots, which are pressing upon the wheel at the open side of the hopper, and cuts off a slice.—An aperture is made through the entire wheel, corresponding with, and of the length of, each knife, so that, when the slice is cut off, it passes through this aperture, and falls down on the other side of the wheel. The wheel is driven by a handle, and roots being constantly filled into the hopper, the process of slicing is carried on.

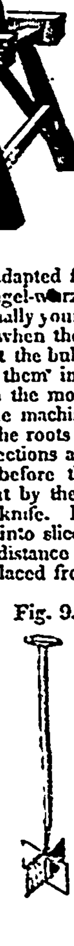
In the following figure, A B represents the hopper in which the roots to be cut are placed: C D represents the large wheel formed of boards and which covers the open side of the hopper: E and G are the cutting knives, extending nearly from the centre to the circumference of the wheel. The apertures corresponding with these knives, extend quite through the wheel. At every stroke of the knife, the slice cut off passes through the aperture, and falls down on the other side. One person drives the wheel by a handle, and another fills the roots into the box. A basket or other vessel may be placed for receiving the slices as they fall.

Fig 8.



This machine is exceedingly well adapted for cutting the roots of turnips and mangel-wurzel for oxen. But when sheep, and especially young sheep, are to be fed in spring, and when their teeth are loose, it is often better to cut the bulbs not only into slices, but to divide them into smaller pieces still, that they may be the more readily taken up by the animals. The machine described may be easily made to cut the roots in this manner. A series of sharp projections are to be placed upon the wheel, just before the apertures, so that the root may be cut by these before it is acted upon by the cutting-knife. By this means the roots are cut not only into slices, but into pieces proportioned to the distance at which these sharp projections are placed from one another.

Fig. 9.



Other machines have been constructed for cutting roots into small pieces. But as the machine described is sufficient for the purpose, and is simple, it is unnecessary to explain other forms of construction.

A very easy mode of cutting turnips into pieces for cattle is by an instrument with four blades at right angles to one another. The turnip or other root is struck as it lies upon the ground, or in the feeding-trough, and thus at one stroke is divided into four parts.

Age of the Horse.

Among dealers in horses, the front teeth, which are called *incisors* in other animals, are called *nippers*, as from the motion of the horse in eating, it is evident the grass is rather broken off than cut off by the teeth. These teeth, six in number, are covered with a very hard substance called enamel, the base of which is phosphate of lime, and is so compact as almost to bid defiance to the best files. This enamel constitutes the outside of the tooth, and as it rises above the surface, is bent inward and apparently sunk into the body of the tooth, forming an indentation or pit, occupying the centre of the tooth, and the inside and bottom of this, being, during its existence, blackened by the food, constitutes the peculiar appearance or *mark* by which, until the tooth is much worn, the age of the horse can be determined. As the teeth, or nippers, are removed at different times, the mark will be partially or entirely worn from some, while it will be entire on others; the difference in the wearing, until all are worn, is a criterion not liable to error. The hollow part never fills up, but remains there till the enamel is worn to the same level, when the wear of the whole tooth is nearly uniform.

The horse's mouth is not perfect, that is, all the teeth, nippers, tusks and grinders, have not made their appearance until he is about six years old. The ware is now operative on all, and the *mark* has disappeared from the central nippers. At seven years, the mark is worn out on the four central nippers, and is fast wearing from the outer ones. At eight years, the *marks* are all gone from the nippers of the under jaw, or the bottom ones; and there is nothing remaining on them which clearly indicates the age of the horse, or "which will justify the most experienced examiner in giving a positive opinion." Dealers, or horsemen, after the animal is eight years old, are accustomed to look at the nippers in the upper jaw, and some aid may be drawn from the appearances they present, as they do not at all times wear away with the regularity or the quickness of the lower nippers. Still the information they give after eight, cannot be implicitly relied on; and it is a common saying among jockeys, that a horse is never more than nine.—*Monthly Genesee Farmer.*

When a horse is sick in winter, he must be covered. Every humane and reflecting person must rejoice at the leaving off the fashion of cutting off the horse's tail. It is clear that nature produces nothing in vain. The tail may be trimmed; but never forget that a horse, harrassed by flies, has no other means than his tail to brush them off, and that it may prevent accidents in keeping him to stand quiet.

Cure of the Heaves.—Take 1 pound of Antimony, ¼ pound Rosin, ½ pound of Sulphur, ½ pound of Nitre, powdered fine and mixed—give a horse half a tablespoonful twice a week, and a cure is certain.

Interesting Facts in Chemistry.

1. Chemistry is the study of effects in heat and mixture, with the view of discovering their general and subordinate laws, and of improving the useful arts.—*Black.*

2. Whenever chemical action take place, a real change is produced in the substance operated upon; and its identity is destroyed. If a carbonate of lime (powdered chalk,) be put into a glass of water the chalk will sink to the bottom of the vessel. Though it should be mixed with the water if left at rest it will soon subside; no chemical action has taken place; therefore the water and carbonate of lime both remains unaltered. But if a small quantity of diluted sulphuric acid be added to a glass of chalk and water a violent effervescence will commence the moment they come in contact with each other, the chemical union of the two substances will be the consequence of this chemical action; the identity of each substance will be destroyed, and sulphate of lime or gypsum (a body very different from either of the substances employed) will be produced.

3. Heat has a tendendy to separate the particles of all bodies from each other. Hence nothing is more necessary to effect the decomposition of many bodies than to apply heat and collect the substances which are separated by that means.

4. It is evident that water exists in the atmosphere in abundance, even in the dryest season, and under the clearest sky. There are substances which have the power of absorbing moisture from the air at all times, such as the alkalies, potash and soda, and sulphuric acid, the latter of which will soon absorb more than its own weight of water from the air when exposed to it. Fresh burnt lime absorbs it readily; and earth that has been freshly stirred absorbs it to a greater degree, at night, than that which is crusted and compact. Hence the importance of stirring the soil among tillage crops in time of drought.

5. Bishop Watson found that even when there had been no rain for a considerable time and the earth was dried by the parching heat of summer, it still gave out a considerable quantity of water. By inverting a large drinking glass on a close mown grass plat, and collecting the vapour which attached to the inside of the glass, he found that an acre of ground dispersed into the air about 1600 gallons of water in the space of 12 hours, of a summer's day.

6. Lavoisser has explained solidity thus: "The particles of bodies," says he "may be considered as subject to the action of two opposite powers, repulsion and attraction, between which they remain in equilibrio. So long as the attractive force remains stronger, the body must continue in the state of *Solidity*; but if on the contaray, heat has so far removed these particles from each other as to place them beyond the sphere of attraction, they lose the cohesion they had before with each other, and the body ceases to be solid."—*Albany Cultivator.*

Fallows.

There is no process in agriculture more important to the farmer, or that contributes more to the durability and fertility of the soil, than fallowing, when skilfully performed; and probably there are few processes, the reasons for which are more imperfectly understood, or the principles that render the operation necessary, more completely overlooked, than in this case. With most farmers, it is sufficient to know, that by fallowing the ground is made fine, and thus fit for the reception of the seed, while the more important changes the soil undergoes by contact with the atmospheric agents, and which are indispensable to insure fertility, are unheeded.

The mechanical part of the process of fallowing is very simple. In our country it usually commences in the forepart of summer, and consists of two or more ploughings and harrowings, as time will admit, or the earth seem to require, until the seed is sown in autumn. This mode, though obviously defective, as not allowing sufficient time for the action of the air and other agents, is still better than simply ploughing up the land and sowing the seed immediately upon it, as is practiced by many. In Europe, with the best farmers, the process commences in autumn, and the land thus rendered uneven by the plough is left to the effects of frost, which most materially aids in pulverizing the soil, and rendering it fit to commence operations upon earlier in the spring than would otherwise be practicable. Late in the season, or early in the spring, there is much land that cannot be ploughed with benefit, as it will knead, or smooth over, which will shut out air, and obviate the end in fallowing. Such soils must be drained, or only ploughed while dry. From five to six ploughings, and as many harrowings or dressings by the scarifier, are usually considered proper, before the requisite fineness and æration of the soil is obtained.

Soils naturally good and friable require but a comparatively little labour to bring them into a proper state for the seed, or restore their fertility when partially exhausted by cropping; but those in which the original earths are less favourably blended, and are tough and stubborn, require a longer time for pulverization, and the consequent atmospheric action on the particles.

The particles of matter, or the earths, when at rest, gradually assume an equilibrium in their