

producing a soluble matter, and also mould, by continued decomposition. The gradual decay of substances above or below ground is certain; the formation of those that may be useful in promoting the growth of vegetables is a very different question. Fermentation is a sensible internal motion of the constituent particles of a fluid, moist, or mixed compound body, by which they are removed from their present situation and combination, and are again joined together in a new or different order and arrangement, forming new compounds with very different qualities from the original body or substance. It results from the combined action of air, heat, and moisture; and the first agent is oxygen, afforded either by the atmosphere, or by the decomposition of the included water; oxygen gas being absorbed, and caloric separated during the process; carbonic acid is one of the results, and fermentation is the natural process for reducing vegetables to a simple state of combination. The first change is the vinous or saccharine fermentation, the conversion of the insipid matter of stems and seeds into a saccharine substance, in which process the presence of water and saccharum are indispensable, and some other things must be added. The gramineous and herbaceous plants are generally stored with saccharum, and the acetous fermentation follows, which is succeeded by the putrid, or the last stage of the process. This last stage is always certain, though the regular gradation of the others may be interrupted. During putrefaction, vegetables emit ammonia, phosphoretted hydrogen gas, and constantly carbonic acid gas, and hydrogen gas, impregnated with unknown vegetable matters. The colour changes to a dark brown; it swells, and becomes heated, and is reduced to an earthy mass. The constituents enter into new combinations; the hydrogen unites with the oxygen, and is either volatilized in water, or separated in a gaseous form, and carries with it a portion of carbon. A part of this principle unites with the azote in those plants that contain it; a part remains in the putrid mass, giving it odour and colour; a portion of carbon remains in the magma, and a part unites with the hydrogen, and a part with the oxygen, forming with the latter carbonic acid. The brown mass, or earthy residue, contains the primitive earths, metals, oils and salts, which are found in vegetables, forms vegetable mould, and constitutes the principal means by which the earth receives back the principles it loses by the support it affords to vegetable life. In this process, air, heat and moisture are indispensable, and a quantity of the substances laid together. Green and dry vegetables ploughed into the land will lie in too small a quantity to generate heat; air and moisture will be nearly excluded, and no active fermentation will happen to afford æriform matters in the soil, as may be daily seen in the case of stubble and other dry substances. The conversion to mould by a gradual decay is undeniable, but activity for present benefit is wanting, unless an incipient fermentation has been effected before the application to break the texture by a disintegration of the fibrous texture. It may very justly be reckoned a wasteful practice to apply for manuring, substances that can be used as food for animals, and thus effect a double purpose. The second crops of clover and tares have been ploughed under for manure, and in that case the first crops must be cut early to allow the second crop to attain a bulk of plants for the intended purpose. If any of these succulent plants be used as a manure for wheat, the bastard fallowing will dissipate the enriching matter, and if it be covered with the last furrow, the land must be in an unwrought state, and it can only be reckoned a catch crop. The only plausible case of application is on places that have failed to receive the due portion of farm-yard manure; but the season being occupied in bringing forward a crop for the benefit of the land as dung, wholly excludes any effectual

working of the soil, and in any case such unmanured lands may be partly wrought and sown with crops that will afford food to animals, and also to the land, by the subsequent application of the excrementitious matter. The use of green crops as manures will not fail to constitute very foul farming; and though a successful isolated case may occur, an extension of the practice will not be expected. The green crops may be harrowed and rolled before ploughing, which will render them more convenient for being covered, and a compost of lime and earth has been added, which will also aid the covering of them in the land, and tend to promote the putrefaction. It may be supposed, that, in the countries where the practice is said to be so very beneficial, the soils may be more loose and friable, the vegetation more rapid and luxuriant, and the plants more juicy and succulent, and consequently more tender and easier of decomposition than in our country, and that a variety of circumstances may combine in rendering the practice very useful in some countries, and inapplicable in others. The plants may be ploughed under when in full blossom, and, if possible, in moist warm weather; and the latter circumstance may constitute an advantage in favour of the custom in the warm countries where it prevails.—*Scottish Agricultural Journal*.

**WIND-GALLS.**—Horses which are subjected to hard service are liable to have what are called *wind-galls*, on those parts of the limbs which are most exposed, especially about the hough and upper pastern joints. The affection is an undue enlargement of little bags or sacs which are situated in the parts named. By the straining of the tendons these sacs become injured, and sometimes take on inflammation, and become hard. Youatt says, "The farriers used to suppose that they contained wind; hence their name *wind-galls*; and hence the practice of opening them, by which dreadful inflammation has often been produced, and many a valuable horse destroyed." As to treatment, the author just referred to directs, "If the tumors are numerous and large, and seem to impede the motion of the limb, they may be attacked first by bandage. The roller should be of flannel, and soft pads on each side of the enlargements, and bound down tightly upon them. The bandage may be wetted with a lotion composed of three parts vinegar to one of spirits of wine. The wind-gall will often diminish or disappear by this treatment, but will too frequently return when the horse is again hardly worked. A blister is a more effectual remedy, and firing still more certain, if the tumors be sufficiently large and annoying to justify our having recourse to measures so severe. In bad cases, the cautery is the only cure, for it will not only effect the immediate absorption of the fluid, and the reduction of the swelling, but, by contracting the skin, will act as a permanent bandage, and therefore prevent the reappearance of the tumor.—*American Farmer*."

**POTATOES IN INDIA.**—The potatoes from Bombay. Darjeeling, the Cherra Poonjee seed, were wonderfully fine and healthy, and to enable the public to form some idea of the state of perfection this grand and staple vegetable has been brought to, in this district, it is here recorded that 40 potatoes out of one garden weighed 20lbs. The skin of all delicately white and fine, and every potatoe free from knots.

**SANDY PLAINS.**—Clay, ashes, decomposed or rotten manure, with clover, it is said, has proved to be the best means of improving sandy plain lands. Plaster is useful in situations where it will set. This can be ascertained by trial.