

spherical sink, twice or thrice as wide as deep, and if convenient, it should have a clay bottom.

In all the above cases, a coating of fresh stable manure, thrown over the top of the fermenting mass, to the depth of eight or ten inches, will accelerate the process, and help to maintain the conditions required. Immediately beneath this manure a thin layer of coal dust from the bottom of an old coal pit may be thrown; this will prevent the putrescent mass from evolving offensive gases, and at the same time absorb what little ammonia may be evolved. After from four to six weeks it will be found that the hard bones will have been so far reduced that a spade can be forced down through them without difficulty. Bones, which when fresh, would have required a twenty horse-power engine to crush them, now crumble beneath the foot of a man. After about from two to three months they may be shovelled out, cut, pounded, and mixed up with a shovel, and applied to the land.

Another process is to make alternate layers of bones and fresh stable manure in a sink, and to throw over them any of the liquids mentioned above, and to cover the whole with stable manure, and let them ferment from eight to ten weeks, when the bones can be pounded and mixed up for use. Still another process is to pack away the bones, as in the first method above, in a hog-head, or box, and mix good unleached wood ashes with them, (at least a bushel of ashes to a barrel of bones) and pour water or soap-suds over them; in this case they may be covered with water at first, and after five or six weeks this water may be allowed to evaporate, and a decomposed, soapy mass will remain, which, on drying, may be pounded up. This mass is the best possible manure for grapes, as it contains phosphate of potash, both the acid and base which are required in large quantities by this plant.

If the bones are burned, or if a phosphatic lime, or a mineral phosphate be used, since they contain no fermentable organic matter, they cannot be decomposed by the above methods, at least not by all of them, but the application of sulphuric acid to them will convert them into superphosphates, in which state their phosphoric acid is readily assimilated by plants. Some manure makers have talked nonsense about phosphoric acid rendered available from mineral phosphates, not being available by plants; such vagaries are altogether beneath criticism, and serve only to exhibit the ignorance of their authors.—*Gardener's monthly.*—*Dr. Pugh.*

THE PLOUGH AND CULTIVATOR.

The plough is, after the spade, the most ancient instrument of husbandry extant; and never rude and uncouth its original con-

struction may have been, as exhibited on coins, medals, and other works of art handed down to us by all the nations of by-gone civilization, it was in any and in every form, a great saving of labour to the husbandman, to be able to extract from oxen that service which the spade and the arm of man had previously executed. So far as the forms of the ancient Egyptian, Grecian, and Roman ploughs are depicted on these vestiges of national art, they appear to have been calculated rather to scratch the soil to the depth of four or six inches, than to turn it over in a continuous and unbroken furrow-slice. Yet, if we may credit the historians of those countries, heavy crops of wheat were obtained from the land, especially in Egypt, where, we are told, as much as from two-hundred to five-hundred-fold the seed sown was sometimes reaped—a produce that would make even an enlightend English farmer open his eyes to the widest extent possible.

Very different in construction and operation is the modern plough of the English machinist. Science, art, judgment, and perseverance have been called into exercise to produce an implement that would fulfil the expectations and requirements of the Royal Agricultural Society, as the assumed exponent of the opinions of the agricultural body. The desiderated perfection of the operation of the plough, as insisted upon by that institution, consists in turning over the furrow-slice in the most perfect unbroken manner, without even a crack in it, and laid at an angle of 45 degrees, and at the smallest expenditure of power, as determined by the dynamometer. Such being the law laid down for the guidance of the competing machinists, they have exerted their talents and skill to the utmost, and have produced instruments that may be justly termed works of art, so scientific, artistic, and elegant are they in their construction, and so cleverly do they fulfil the requirements of the judges of the Royal Agricultural Society. We can, in fact, conceive of no operation in husbandry more beautiful than that of a clover-lay ploughed up by one of Howard's or Ransome's latest-constructed implements. By them the flag is turned over so gradually and carefully that it lies recumbent like an elongated unburnt brick, without a crack, and exhibiting nothing of its previous covering except a thin streak of verdure at the point of contact with the preceding furrow-slice.

About the latter end of the last century a Mr. William Lester, of Northampton, M. P., invented an instrument which he termed a grubber or scarifier: and so useful did it appear, that the Society of Arts awarded him one of their silver medals for the invention. In the first instance, the grubber appears to have been intended rather to scarify the sur-