shall address you in plain and familiar terms. I do not want to play the orator, but rather to take the part of the teacher, if I can succeed in so doing (*cheers*), I wish first to speak to you about ploughing.

There are all kinds of ploughing, the use of fallows and *the use of draining*. Now *these operations are* intimately connected together. In the first place, what does the plough do? I will show you. Every year the atmosphere must make soluble a number of the chemical substances to which I have alluded (I need not go over their names again), to be taken up by your plants; otherwise those plants will not grow, The atmosphere is always acting on the land. Now suppose it is acting on an acre of land, and you take the plough, and throw up the soil to a depth of six, eight, or ten inches. After you have done this, only perceive to what an extent of surface it then operates, compared with what it did before the acre had been ploughed and when the upper surface only could be acted upon By thus opening up the land, you let in the atmosphere; the soil is disintegrated, so as to set free the largest quantity of those necessary substances for the succeeding crop. I can imagine gentlemen saying, "If I were to stir that land to the depth of eight inches, I should never get any thing to grow." But could you not subsoil it first? (*Hear*). Messrs, Drewit, of Guildford, have actually ploughed into chalk, and made a soil for themselves, But they manure well, gentlemen (*Hear*). Ploughing is comparatively of very little use unless deep: it is perfectly absurd to see them in Norfolk ploughing to the depth only of two inches and a half, I think they are wrong, because they prevent the action of the atmosphere upon the substances of which I have been speaking. Now what do fallows do? Why the very same thing, they leave the land exposed to the action of the air, but by ploughing deeply you accomplish the same end. (A member observed "Fallows are pretty well out of fashion now") so that fallows are nothing more than a*ssistance to the plough. It is, however unnecessary*; you can always do without it, except in cases where there are great quantities of weeds to be eradicated and these should never have been allowed by a good farmer to get ahead. A spring fallow for turnips is quite sufficient; but a fallow in the early part of the spring is all that ought ever to be attempted. For it is much better to have green crops and plough them in, than to have any fallow at all. Well, then comes the draining. Draining acts in two ways: one way in assisting the operation of opening up the land to the action of the atmospheric air, and the other in taking away the redundant water from the roots of plants. The water either arises from springs in the land, or it falls from the heavens. That which arises from springs is generally best got rid of by boring; and that which falls upon the surface, you do not want to take off the cream of the joke, or, what is the same thing, the cream of the land. You want it to percolate; so that all the substances alluded to may let very little else than pure water go away. There has been a good deal of talk about the respective merits of deep and shallow draining. My opinion is, that deep draining is much the best. The marrow of the landlies between the drain and the surface: the marrow of these useful substances will with deep draining be retained, and the water will run away slowly. Draining acts also in another way. After you have made a drain, you will soon observe a great number of fissures in the land, this will be the case even in the stiffest clay. These fissures rise up to the very surface, and allowing the air to get in, the same effect is produced as by ploughing. This is constantly at work; as the water goes down the fissures are left open. Thus there is a constant action of air and water—air and water which are of the greatest benefit to the plants of the soil, in liberating those useful mineral substances (*Hear, hear*). Now the drains prevent an excess of water, which is a great object to be accomplished; for the *moment the plants have had enough*, that which remains and was useful at first, now begins to act as a poison. Draining is also highly beneficial in carrying the water of the surface of the land: if it lies upon the surface of the land it has the effect of cooling it; and you all know that you want heat. You well know the difference between what is called cold land, and a warm genial soil (*Hear*); and this difference plainly depends upon the presence or absence of an excess of water. If you have your land covered or saturated with water the sun is employed only in evaporating that water instead of heating the land.

The next point to which I propose to call your attention is the process of making mixens, and manures in general. Now these manures must consist of oxygen, nitrogen, hydrogen, and carbon, with the mineral ingredients before mentioned. Your manures are made up of vegetable matter, straw, and animal excrement. Some people think—I have met with many people who think that the lands derive great advantage from sheep being put upon them; they imagine, if they put a flock of sheep upon twenty tons of swedes, that these sheep have some unaccountable way of benefiting the land. Why, they cannot put anything upon the land which they do not derive from the turnips. They have no power of making manure themselves; hey will in fact take something from the land. Twenty tons of turnips rotted in the land, would give more manure than the sheep will give by eating the same amount of turnips upon the land I do not say that it is better to rot your turnips than to feed your sheep upon them, but I am stating a matter of fact in relation to the comparative amount of manure to be derived; and I repeat, that the whole of the manure *which they can put upon the land, they derive from* the turnips. When you use hay, or linseed, or oil cake in addition to the turnips, you are adding manure to the land, for the major portion goes upon it. These sheep, then, derive the whole of their manuring power from the food which they consume; bullocks do the same. Where do vegetables derive their sustenance? —From the mineral substances in the land; from the air, and the principles of those from the air, are carbon and nitrogen. The carbon is there in sufficient quantities, but the nitrogen it is well to supply in the form of ammonia. Your mixens consist of fodder for the cattle, their excrement, &c., all put together in a heap in your farm-yards. These yards are generally made with a gentle slope down to the horsepond; then the outhouses and sheds are constructed with the greatest ingenuity, so that all the urine may run away from the mixens; taking care that the whole shall be washed by the drippings from the outhouses, and that all the washings shall be drained off into the horsepond ("*Hear.' and laughter*). Why, I believe,—I know it has actually been conjectured by some people, that this mixture, this part of the manure, which would have been invaluable to the vegetable when preserved, was beneficial to the animals that drank out of the ponds. Now allow me to say, that I believe that one half of the consumptions in cattle arise from their drinking this abominable mixture: diseases of the lungs must be generated by drinking such a compound Putting this matter however, out of the question, this urine and this soluble matter which are thus washed away are the most valuable portions of the manure, By allowing these to run off, you take from your manure the potash, the soda, the chief part of the phos-