is only slow combustion, or burning; no matter whether we char the plant or leave it to decay, we obtain exactly the same products as we did by our analysis, that is carbon and salts.

But because there is not heat enough, we leave by decay, a portion of the hydrogen and oxygen still united to the coal. A slow mouldering fire leaves products more like those of decay. Decay is a slow mouldering fire, hence the products of the day of plants, are very aptly termed mould. It is the product of a mouldering fire, that is an an imperceptible union of the oxygen of the air, with the carbon of the plant. A union is slow, that it gives out neither heat nor light. And yet it is in its results, the same as if fire had actually been seen and felt. Mould contains, then, a part of the carbon, oxygen and hydrogen, or, if you like the terms better, mould and soil consists of the of the water and coal and salts of the plants. Mould is truly manure. If the Mould of soil, as it has thus been defined, were separated from the earthy portions of soil, it would deprive that soil of the power of growing crops. Here then, we come to a broad distinction between soil and manure. The soil is the earth on which plants grow. The mould is the manure of that soil. The soil is the earthy; the mould that is, the carbon and salts, together with the elements of water, are the vegetable part of arable land. But though the earthy part, the soil as it is usually called, acts as a support, on which plants grow, it does not play merely a mechanical part. It was a distinct, decided and important action upon the manure. This action is chiefly chemical; and the fact that soils and manures do mutually affect the growing plant, is proved by the circumstance, that the first plants which grow derived their salts from the earth.

But the chemical action of soil does not belong to the present discussion. We can understand what manures are, without deciding how they act. We can theorize and guess about the how of their action, when we have learned what they are. That is chiefly what the farmer wants to know. He wants to know what manure is, and what is likely to act as a manure. To these points we shall confine our present remarks. Pointing out the great principles, applicable to all manures, the nature of soils, and the manner in which they affect manures, must be left for another essay. The vegetable or manure part of soil alone, is now to be considered. Consider now, reader, the great results to which our analysis has led us; that a slow, mouldering fire gives us the same products as are formed by decay; that this is only a slow, mouldering fire, and that mould its product, is the natural manure of plants It follows, that whatever substance produces mould, that is, water, carbon, and salts, may be used instead of this natural manure, Among the salts found in mould, some are volatile, and are easily dissolved by water. Others are fixed, that is not evaporating easily or not at all, and are quite insoluble in water. Now the first, or volatile and soluble, first act when in manure. They act quick, and are quickly done. The fixed and insoluble act slower, they last longer. The volatile act in the early stages of growth, the fixed in the latter periods. The great differende in the action of manures depends almost entirely upon the salts which they contain. These are the most important and essential. It is not so much the vegetable mould of manure which you want, as the salts which it contains. This a well settled principle. Land which has undergone the skinning process, old, wornout, and run out land, still contains a very large portion of vegetable matter: the coal or carbon of mould without its salts. Give this wornout land salts, and you may, by these alone bring it back not only to its virgin freshness, but you may even by salts alone make it fairer and richer than it was before man ever cultivated it.

Too much stress has been all along laid upon the kind of soil. Go now to "Flob," in West Cambridge, no better farms or farmers look the world through. Ask any of these practical men, whether the sandy or gravelly soil of Old Cambridge Common, or even of Seekonk Plain, can be made to bear as rich crops as their land? They will tell you yes. If your land will hold manure, muck it well, and it will be as good. Now, this holding of manure belongs to the subject of soil, and throwing that out of consideration, it is found that even lands which do not hold manure, which have been worn out and exhausted by cropping, hold yet a great deal of insoluble coal of wood. They want salts, and something which will make this inert, dead vegetable matter of the soil, active. The mould is active in proportion, as it is more or less dissolved by water. Mould consists of two parts: one is dissolved, though only in a slight degree, by water: the other is not dissolved by water. Some substances, however, do render mould very easily dissolved by water. Hence if you reflect a moment on these facts it will be seen that mould itself, being valuable in proportion to the ease with which water dissolves it, that whatever substance so enables mould to dissolve, may be added to it, and thus increase its value. Now the things which do this, are the alkalies, soda, potash and ammonia. These principles being well settled, we may enter on the consideration of each different manure. They will be valuable in proportion to the quantity and kind of salts, each contains, added to the power they may have by producing their decay, substances which make their mould soluble. Now this last property, that is, the property of producing a substance which makes mould soluble, depends wholly upon the nitrogen of the manure. This nitrogen in the process of decay, becomes volatile alkali or ammonia. The word ammonia, will occur so often in the present discussion, that we should endeavour to fix some definite idea to it. You need not, reader, be acquainted with all its chemical properties, I suppose every man who will be likely to read these remarks, has smelled ammonia. It has been already said, that it gives the peculiar pungent smell to the common smelling bottle.

This is volatile ammonia. It is always formed when animal or vegetable bodies decay.

It has been already said, and is now repeated in order that it may never be forgotten, the ammonia is formed by the union of hydrogen and nitrogen. Hydrogen and nitrogen, two airs, nitrogen forming four fifths of the air we breathe let that be borne in mind, and without going into the chemistry of ammonia further, or the mode of calculating how much ammonia a pound of nitrogen will make, it may be laid down, and must be remembered too, that every pound of nitrogen must be called two and a half pounds of sal volatile, or smelling salts of the smelling bottle Two and a half pounds of volatile ammonia formed from one pound of nitrogen. If then we can determine, as chemistry may, how much nitrogen exists or forms a part of manure, two and a half times that will be the ammonia of that manure. If then the vegetable part of manure is as we said, valuable and active, in proportion to its degree of being dissolved by water, then, as ammonia gives it this easy solubility, we may safely say, that the quantity of nitrogen in manure, is the measure of the value of its vegetable part. One thing must be guarded against not to place from this view the whole of the value of manure upon its ammonia Remember that manure consists of carbon, water, and salts. The whole are equally essential to its action. There is no eye, nor ear, nor foot, nor hand in manure, which may say to the other members, "I have no need of thee." The whole act together; but it is not to be doubted, that ammonia is the heart of manure, and keeps up the healthy circulation among the other members."

Good Farming.—It may be laid down as a standing rule, and as a guide to direct our exertions, that all good farming, the whole of that process by which bad land is to be converted into good, or land naturally good and productive is to be continued in that state, is comprised in the three following operations of husbandry. 1. To carry off all stagnant and superfluous water by means of judicious draining. 2. To return through the medium of manure, the strength and fertility which has been extracted from the land by cropping. 3. To eradicate all noxious weeds, that the strength of the manure may be thrown into the crops and not into the weed.—*Rawstone's Remarks on Lancashire Farming.*

From the Albany Cultivator.

HAY MAKING.

We think it best to cut grass for hay, as near as possible to the time when it is in full bloom. Of course if it is cut when most of it is in this state, some may be little past, and some may not have quite reached full bloom. We know there has therefore been some difference of opinion as to the stage grass should be when it is cut, but we believe the experience of the best farmers is in agreement with the position above assumed. Those who are in the habit of curing herbs, cut them when in this stage, because it is known that they contain at that time the most of that peculiar principle from which they derive their efficacy and value. The saccharine of sugar principle, which constitutes one of the chief sources of nutriment in herbage, is found in the greatest quantity at the period of bloom. It may sometimes be expedient to cut grass before it has reached this state; particularly where it falls down, and is in danger of souring or rotting. When this happens, it should be cut, whatever state it may be in, because if it remains on the ground it will spoil, and the fermentation which takes place, will destroy the roots. Another great advantage in cutting grass before the seed forms, is that the roots are not so much exhausted, and the after growth is much more vigorous.

In some parts of the country, it is the practice to mow the grass and let it lie untouched on the ground, "thro' sunshine and shower," for several days before it is stacked or put in the barn. It is quite common to begin Monday and continue to mow till Saturday, when with hand-rakes and horse-horse, all turn in, take it up and stack it; and this is done too, without much regard to the state of the weather at the time it is raked, or to what it may have been after it was cut. The appearance of the animals which are fed on hay thus managed, is evidence enough of its worthlessness.

After grass is cut and partly dried, it ought never to be exposed to dew or wet. The best way is to spread out the mown grass evenly, as soon as the wet has dried off from the spaces between the swathes, and before the dew falls in the evening, rake it and put it in cock. Where the crop is heavy considerable time will be gained in making, by this plan. If it is only wilted when it is put in cock, it will in a short time undergo a *sweat*, which will much facilitate its making when it is again opened to the sun. Many good farmers believe that it will make more in two days, if it is kept in cock twelve hours, than it will make in three days without being put in cock.

In making clover hay, we are decidedly in favour of not exposing it much to the sun after it is first wilted. We speak from experience, having practised various modes, and we are certain that it may be made with less labour, and that it is of far superior quality when cured in cock, than in any other way When the swathes are a little wilted, pitch them into cocks—laying it up in such a manner that it will stand the weather, which is easily done by the exercise of a little care. Examine the hay from day to day to see how the prsecss of curing advances, and when it seems to be so well made that with what it will dry in handling, it will do to put in the barn or stack, turn over the cocks, loosen up the bottoms a little with a fork, and proceed to load it. Clover hay thus cured is not likely to heat in the mow or stack, and from having every leaf and head saved, will be found to be very nutricious and much relished by all animals. In fact, we believe that clover hay properly cured, will make more flesh, milk, or butter, than any other hay, pound for pound. The prejudice against clover has arisen from the bad manner of curing it. Knocked about as it frequently is, wet and dried by turns, it loses its leaves and heads, and becomes little else than a mass of tasteless stems, which no animal will eat,

Loss of Time in Ploughing.—When ridges are 78 yards in length, no less a space of time than 4 hours and 39 minutes is spent in turnings in a journey of 8 hours, whereas when ridges are 274 yards long, 1 hour and 19 minutes is sufficient in the same length of time.—*Code of Agriculture.*