article, can be effected only by DEEP DRAINING. M. M.

From the Albany Cultivator.

WHAT MANURE DOES THIS FIELD NEED?

THIS inquiry is beyond question one of the most frequent and important that presents itself to the farmer.

With the light which has, within the last few years, been thrown upon the subject of manures, their nature, and the secret of their value, something like a practical course has been revealed. It may be illustrated as follows:

If a soil fails to produce a given crop, it is because it either wants the *requisite texture*, or it wants certain essential inorganic ingredients, or it may be deficient in both.

If vegetable refuse in sufficient quantity has been strown over and ploughed in, the deficiency of one or more *essential inorganic ingredients*, must be considered the solution of the failures.

Now how shall this deficiency be ascertained? How shall it be determined what a soil needs?

It may need gypsum, or phosphates, or potash, or soluble silica, or lime. It may be benefitted by ashes, or poudrette, guano, or fish. But it probably does not need *all*, and would not, probably, be equally benefitted by them severally.

Which, then, shall be selected? How shall any one without aid, be enabled to determine what will benefit his soil *most?*

The following suggestions are made in general reply to this inquiry.

Having prepared a few square yards or rods, so that the texture shall be all that is desired, let equal areas—six feet square each, for example—be accurately measured and staked. If the soil in the same field be variable, each kind may be treated for a separate experiment.

Then let equal quantities by weight of a thoroughly pure grain, wheat, or rye, or oats, or any other it may be desired to try, be sown and covered, in these several areas. Only one kind of grain will be employed in the experiment. If others are to be tried, let separate areas be selected and prepared—a suit for each grain.

Then take small quantities of gypsum, potash, soda, ashes, bone-dust treated with diluted sulphuric acid, night soil, or any of the so called manures it may be wished to try, and put them upon or near the surface of the soil. If deeply buried, they might be dissolved by rains, and carried down beyond the reach of roots.

Now all will receive from the frost, the rains, the dew, the sunshine, and the drought, the same treatment. From the native soil they will derive equal measures of nutriment.

But from the added manures they will derive unequal advantage. Some of the additions will contain a desired ingredient—others will not; and the relative values will be indicated in the relative weights of the ripened grain at harvest.

The seed was weighed. The harvest must be weighed. The better manure will be pointed out in the higher weight and plumper appearance of the grain.

That the manures may be compared, and the relative profits of this or that readily estimated, positive quantities should be employed, that is, such, that by measure or weight, the cost of that used may be accurately known.

The weighing for the occasion, if not otherwise convenient, might be made with the sugar and tea scales of the nearest grocer. As the grain to be sown is, for each lesser piece of ground to be the same in weight, the quantity for one being determined, it may be placed in one scale pan, and the other parcels severally balanced against it.

There is some trouble in all this care about *quantities*; but if the conviction be deepened that a faithful attention to them is indispensible in experimentation that is to be of value, it may perhaps be more cheerfully engaged in.

It sometimes, indeed frequently, happens that farmers purchase large quantities of a given manure, because they have learned that it had been found serviceable in particular cases. They hope to reap a profit commensurate, within certain limits, with the amount of manure employed; regardless of the greater or less correspondence there may exist between the soils upon which it had been found profitable and their own. They employ it. They are disappointed.—The manure does *not* contain what *their* soils need, though it may have been admirably suited to the improvement of others.

What the producer wishes in making purchases of raw material, is, to obtain as much of that which can be used, and as little of that to be thrown away, in a given quantity, as may be.

So with the grain grower. He wishes to pay for *just that* which will grow wheat, or corn, or oats. Other materials, of no service to the immediate crop, only to be washed away by rains before a seed demanding them shall be sown, he cares less to pay for.

E. N. HORSFORD.

Cambridge Laboratory, May, 1847.

From the Farmer's Gazette.

SALT.

OXYGEN is a body existing only in a gaseous form. We can neither see, taste, nor smell it, yet we know it is absolutely necessary for the support of animal life; it is also the principle of combustion and is considered the most powerful and energetic agent in nature. It is therefore the great agent which joins and prepares the other simple substances for further associations, which they are unable to effect without having been previously united to oxygen; and as it is a component part of atmospheric air and also of water, its sphere of action is very extensive.—Its compounds with the metals are called oxides.

Hydrogen is a body existing also in a gaseous form. It is procured solely from water of which as its name implies it is the principal ingredient; (oxygen being the other constituent) hydrogen possesses all the physical properties of common air, but it is sadly deficient in the vital ones, breathing it being instantaneous death to animals. It is also the lightest of all bodies, and is therefore that used for inflating balloons, which it soon carries with it to the higher regions of the atmosphere; and not only does hydrogen rise in its uncombined state but it also rises in vapour combined with oxygen and with some other substances, and thus there are always the elements of water in the atmosphere; when these elements are exposed to a heat, equal to that which appears red in day light, which is estimated at about 1000 ° of Fahrenheit, they combine, and by the process of combustion form water. The compounds of this gas with the metals are called hydrates.

Chlorine is another gas, of a yellowish green colour, with a very disagreeable astringent taste, and a most suffocating smell, exciting much irritating in the windpipe, even when diluted to a considerable degree with air. By great pressure it is made to assume the form of a liquid of a bright yellow colour. This gas seems to be an intimate relative to oxygen, for in common with it, it supports combustion, and imparts light and heat when strongly and suddenly compressed. Its bleaching powers is one of its most important properties, for it removes immediately all animal and vegetable colours, so that they can never again be restored. It is also very effectual in fumigation by purifying the air of infectious diseases—it speedily destroys the infection of fever and small pox, and the latter disease will no longer be propagated by articles subjected to the influence of chlorine. This gas was discovered in 1770. Its compounds with the metals are called chlorides. The combination of these two latter gases, hydrogen and chlorine in equal bulks, form a compound the bulk of which is equal to the bulk of the two composing ingredients, and named from its composition hydrochloric acid. A composition of the first mentioned gas, oxygen, with the simple elementary metal sodium, forms a compound named soda. These substances hydrochloric acid and soda, are both, when pure, of a very caustic nature, that is very destructive of the substance of the human body, so that a small part of either taken singly as compared to what is taken daily in the compound would produce instant death, yet the compound resulting from the union of the two is that wholesome and familiar substance COMMON SALT. Thus, a composition of hydrogen and chlorine forms a compound named hydrocloric acid, and a composition of oxygen and sodium forms a compound named soda, and a composition of both these compounds forms a compound which is common salt.