

its productiveness; the crops which were taken from, and the manures which were applied to it, &c., &c.

Having made these preliminary remarks, we proceed to the

EXAMINATION OF THE MECHANICAL TEXTURE OF THE SOIL.

For this purpose, about three ounces of the soil are to be placed in a Beaker Glass, and washed with small and successive portions of hot water. The mass, well stirred, is to remain at rest for some time before the water is poured off, and a new portion added to it. This operation is to be continued until the wash-water runs off clear, thus effecting a perfect separation of the heavy particles of "quartz-sand and the fragments of undecomposed rocks" from the light mass of soils, to which we have applied the term "cement." The remaining particles, consisting of quartz-sand and undecomposed rocks, are then to be dried in the air, and weighed, and the weight noticed in per cent. I.)

This weight deducted from the whole weight of the soil taken, leaves the quantity of cement it contained, which has also to be noticed and expressed in per cent. II.)

The quartz-sand and rock particles are then submitted to an ocular examination with the aid of a microscope, III,) for the purpose of determining the rocks, from the degradation of which the soil was formed; and have to be preserved for future comparison.

The wash-water from the preceding operation has to remain at rest, until all of the cement has settled, which was held by it in suspension. The clear water is then poured off, and the cement after being well shaken, collected upon a filter. As soon as the water has ceased to drop from the filter, any portion (about 200 grains) of the contents of the filter may be taken and weighed in a platina dish on a delicate chemical balance. It is then to be removed to a closed water-bath where it has to remain for about one hour and a half, after which time it is again weighed and its loss calculated in per cent. IV,) which will express the water-retaining power of the cement.

Its physical state after drying must also be noticed, whether it presents a baked mass, divided by clefts and fissures; or a loose one easily falling to powder, V.)

It is then to be placed in an exsiccator—a room which is kept perfectly dry by means of concentrated sulphuric acid—and there remain for about four hours, after which time it is again weighed, and the increase in weight also calculated in per cent. VI,) which will express the absorbent power of the Cement for gases.

It may then be placed in the open air until it does not increase in weight any more, when it is again weighed, and the increase in weight calculated in per cent. VII,) which will express the absorbent power of the cement for moisture.