soils. Thorough-draining well executed in clay soils may be reckoned upon as being fully as permanent as in any other subsoil; and, as there is less running sand from the clay, the drains are less likely to become filled up. Clay when drained and having become filled with fissures, will never entirely fill up again, although in wet seasons the fissures may swell and close up a little, therefore, if the consequence of sinking the drains was that the whole mass of soil became full of fissures, it must be manifest that if the land were not drained the rain would fill up all the openings of the active soil; and whatever rain fell would run over the surface into the water-furrows, carrying with it a great deal of the finest particles of the soil. It has been usual for some farmers to set off their lands in very narrow ridges, and to give the surface a curved form, that the water might run easily into the furrows; by this means much of the land was entirely lost for cropping, and much of the grain which grew for a considerable distance on each side of the margin of the furrows was stunted and worthless. Where drains are properly executed. the water falling upon the surface finds its way into the drain by slow percolation, thereby leaving all sediment behind it to enrich the soil. After some scientific remarks upon the decay of vegetable matter, and the food of plants, and the displacement of the air in the fissures by water after showers, Mr. Smith proceeded, by saying, that if the soil were within four or five inches of the surface, it would by a continued course of crops, become exhausted in fifty, sixty, or a hundred years, but if, by thorough draining it was opened up, those portions were rendered available for the purposes of cultivation which lay at a greaten depth, and plants would there find what they wanted, both of mineral and vegetable matter. Another great advantage of thorough draining was, while it carried off all free water, it gave the soil when drained a greater power of retaining moisture than before, and which soils would not, therefore, become parched up in dry seasons, as frequently is the case with undrained stiff clay soils. Now, in looking at the diagram, to which he pointed, they would see that the twelve inches of subsoil opened up by contraction would be quite enough to receive all the rain that would fall in twenty-four hours, in fact the greatest height which it could attain to, he believed would be nine inches; all above that would be in a free state, and passing through by percolation, without doing any injury to the plants. Chalk soils, he observed, are very difficult to drain, and although apparently dry on the surface, they are very retentive of moisture. He was of an opinion that thorough draining might be beneficially applied in chalk subsoils, and probably the same distance from drain to drain might be suitable, as on the other soils; but, one thing was clear, that whatever soil required draining, the best economy was to drain it thoroughly. With regard to the depth to which drains ought to be cut, he would say that from two and a-half to three feet was a good practical depth; four feet would perhaps be better, but there must be a limit as regarded expense, and considering utility and economy, he thought the depth he had mentioned was just about sufficient to secure what was wanted, viz.. a thorough and complete drainage at all times. It was of great importance, in the construction of drains, that they should be kept narrow at bottom, for two reasons: first, because fewer stones would be required; and secondly, because if any sediment should be deposited, the water would have greater power to act upon a confined channel, and thus remove it. The most important things with respect to the stone drain is, so to cover the stones with thin turf as to prevent the ingress of any water in a direct manner into the drain. He would therefore, recommend first, that a thin covering of turf be put over the stones, and well tramped down, and that this should be followed by a depth of six or eight inches of the stiffest of the clay which had been dug out; this, also, being firmly and well trodden down, so that no water can find its way directly into the drain. In box drains the water rushed along with great force, and this force ultimately destroyed the dram itself; but in the drain made with broken stones, the water was prevented from gaining a rapid motion. In executing tile drains, and the best form of construction, he remarked that the horseshoe section, with a sole made a very good drain. In some places, he said, they constructed their drains without using soles, but by adopting the horseshoe section without the sole, the subsoil became forced up and destroyed. Much had been said of tube tile of late, and he certainly approved of it himself; it was much stronger and the form much better than the other description of drain tile, as regarded the discharging of water. Some farmers used tube tiles of one inch bore; but he preferred the size of inch and a-half or two inches, as it would admit of a freer circulation of of air. In cutting in clay soils, it is a very easy thing to cut the drain so nicely to the size of the tiles as to allow them to be put in without any fear of displacement; but it was not so in stony soils, to obviate which difficulty he had lately introduced a mode of forming the ends of the tiios so as to interlock with and sustain each other: drains could be as cheaply executed with this kind of jointed tile, as with the common tiles or tubes. He was satisfied there was nothing so suitable for filling in upon the tiles as the stiff clay dug out of the ground in cutting the drain itself, which ought to be well tramped in. When drains are well construc ted, either with stones or tiles, so that water is not allowed to get directly down, they may be calculated to last for 100 years; he had himself seen drains in a perfect state after thirty years' use. After again directing attention to the importance of making the drains of the most substantial nature, he concluded by requesting that the modesty of the gentlemen present should not deter them from putting any questions to him which might suggest themselves, and to which if he could answer them he would, and if not he would candidly tell them so.

AGRICULTURAL TRAINING SCHOOL AT HODDESDON.

(*Abridged from the Herts County Press.*)

The introductory lecture on the opening of the Hoddesdon agricultural school was delivered before a large and highly respectable meeting on Tuesday, Jan. 15, by the head master of the establishment, Mr. Hazlewood. On commencing this gentleman observed that. through the instrumentality of a few patriotic individuals, all the sciences connected with agricultural prosperity and the improvement of the soil were at *last* made accessible to them; still he did not think the useful sciences, to be taught by him and his coadjutors, should be confined to the agriculturist alone, for he believed the times were fast approaching when it would be found desirable for all classes to avail themselves of that knowledge. He next observed, that mathematical science, whether considered in its nature or its results, appeared equally amongst the noblest objects of human pursuit and ambition: that from a few self-evident propositions was originated an intellectual creation applying to and illustrating all the