

little if naturally dry or well drained, or planted early with manure that does not stimulate, such as loose litter, ashes, or without manure."

[To be continued].

NORMAL SCHOOL, TORONTO.

We are glad to find that the science of Agriculture has obtained a footing in this valuable Institution. His Excellency the Governor-General intimated to the Board of Education, some time ago, his desire to offer two prizes, to any two pupils who might pass the best examination in Agricultural Chemistry, Vegetable and Animal Physiology, and the Chemistry of Food.

At the recent half-yearly examination, his Excellency's liberal offer was carried into effect. The competitors amounted to no less than thirty-two, several of whom were females. The pupils were allowed four hours in each of two days to return written answers to a series of printed questions, amounting to sixty-six, and embracing the most important principles of Chemistry, together with Vegetable and Animal Physiology. We should state, that the pupils, during the time of writing their answers to the questions, were under the eye of one of the Masters, and were not allowed the use of any text-books or notes.

The first prize (consisting of a judicious selection of Educational and Scientific Works, to the amount of five pounds in value) was awarded to Mr. Abraham Diamond, of the Midland District. The second prize (consisting of books to the amount of three pounds) was given to Mr. James T. Pennock, of Johnstown District, both natives of Canada, and the sons of farmers. The prizes were presented by the Honourable Chief Justice Robinson, before a large and respectable audience, accompanied by some appropriate remarks, in his Lordship's usual chaste and felicitous style. Although there was, of course, much inequality in the attainments of the pupils, yet, when it is considered how fully and correctly many of the questions were answered by a considerable number, most of whom had devoted only a small portion of one Session of five-months to the subjects which the examination embraced, we feel pleasure, as one of the examiners, in saying, that the result was equally creditable to the efficient instructions of the Teacher and the industry of the pupils. We were particularly pleased with the returns of several of the females.

The following gentlemen were appointed by the Board as Examiners:—

Thomas Jaffray Robertson, Esq., Head Master of Normal School.

Henry Youle Hind, Esq., Mathematical Master, Lecturer in Chemistry, &c.

Henry Holmes Croft, Esq., Professor of Chemistry King's College.

Edward W. Thompson, Esq., President Home District Agricultural Society.

Francis Neale, Esq., A.M., Vice-President do. do.
George Buckland, Esq., Secretary to the Provincial Agricultural Association.

ADVANTAGES AND DISADVANTAGES OF SUBSOIL AND TRENCH PLOWING.

Subsoiling, we are to understand, consists of loosening the ground below the depth it is ordinarily disturbed by common tillage. A heavy plow is first run along the field, say from six to ten inches deep, and is then followed, in the bottom of the same furrow, by a subsoil plow, which has no mould board, stirring the soil to a depth of six or seven inches more.

The reasons generally stated in favor of the system, by its advocates, are the following:—1st. That where there are drains in a field, subsoil plowing facilitates the escape of water into these drains. 2d. It deepens the actual thickness or amount of soil to the extent of from eight to sixteen inches; thereby affording double nourishment to the crops. 3d. It increases the heat or temperature by lessening evaporation. 4th. In dry summers, when crops are parched, the increased thickness of soil, which causes the roots to penetrate to a greater depth than usual, enables the crop to withstand the drought.

The chief objections urged against subsoiling are:—1st. The extra labor of men and horses. 2d. From the tardiness of the operation, it drives out of season the other work of the farm. 3d. On light, leach soils, it is attended with little or no benefit, but on the contrary, is injurious in causing rains and liquid manure to descend more readily beyond the reach of the roots of the plants.

By trench plowing, the soil is cast up to the surface and is either benefited or injured thereby, according to the nature of its constituents and the manner in which it is trenched, after it is turned up. For instance, there is often contained in subsoils, a considerable proportion of matter, called by chemists *protoxide of iron*, which is readily dissolved by water, and in that state, is poisonous to plants, directly applied to their roots; but if these subsoils are opened to the influence of the atmosphere, the substance will gradually be converted into *peroxide of iron* (common red iron rust), and may be applied to crops without injury. It often happens, also, that some subsoils embrace fragments of rocks containing sulphur combined with iron (sulphur of iron), which on exposure to the atmosphere, is changed into green vitriol or common copperas (sulphate of iron), in that state is quite as unfit for the food of plants as the protoxide of iron. Both of the two last-named salts, however, when brought into contact with lime, or any of the alkaline carbonates, are easily decomposed, changing the iron into a peroxide, which is not only harmless to plants, but in some cases beneficial to them. The sulphuric acid, contained in copperas, also, at once combines, in definite proportions, with the lime, or other alkaline bases, springing upon the soil, and forms in one case, sulphate of iron.