

first growth, then they would require cutting and laying, and after that they would require protection, and a straight board fence will not require more than a third of the land the other would occupy. In the first place, a proper thorn fence would require to be five feet in the base, with two four feet ditches; that is equal to thirteen feet and would occupy more room than any zigzag fences. A straight board fence will only occupy six feet clear from the plough, and if farmers have circumstances to do it, it is the cheapest fence that can be made. Until such time as they can be raised by practical men, I am of opinion that thorn fences cannot be put in practice.

Mr. MILMAN approved of thorn fences, but thought they could not do so well here as in the old country, they requiring a great deal of protection on account of the climate; banking he thought too was not so substantial as in England, and he instanced one portion of the Great Western Railway as a place that elucidated his theory. He would, however, be glad to see them in this country, if they could be made substantial.

After a few remarks from the Chair, a meeting was called for Donaldson's Hotel, on the 2nd of March. Subject—"Quality and varieties of seed."

A vote of thanks was then passed to the chairman for his conduct in the chair, and to Mr. Cooke for his paper, and the meeting separated.

## Communications.

### ON THE MODERN SYSTEM OF DRAINAGE, AND ITS APPLICATION IN CANADA.

(Continued from our last.)

#### No. II.

When in the exercise of his vocation the Engineer, the Architect, or the Mechanic, proceeds to lay out a Railway, erect an edifice, or construct a machine, he makes himself perfectly acquainted with the object to which he is about to apply his professional ability. He does not commence operations with vague ideas of what is to be attained, but he determines at the outset, by inspection and measurement, such a fixed and definite plan of his design that by adhering to it he in due time arrives at that completeness of result which he was thus pre-assured would be accomplished. And this holds good in almost everything we undertake: for if work is begun with an imperfect perception of what is desired, it is more than probable the result will be equally imperfect. Let us, therefore first endeavour to understand clearly what it is we seek to obtain by artificial Drainage; and then consider the means by which it may be secured.

Now, the mechanical action of drains is two fold—the discharge of superfluous water; and the admission into the land of atmospheric and other influences—and in proportion as the work is effective in these respects will be its practical value. It may be asked then, in order to have some test of excellence whereby to judge of efficient Drainage: what is a fitting state of dry-

ness for land to be in to admit the greatest crops with the least compensating outlay? Fortunately we are not without unerring evidence to determine this point; for the transitions of strata are so numerous, and often so abrupt, that few can have failed to notice the more economical and certain productiveness of land on a naturally porous foundation, compared with the more precarious and costly yield of the strong and wet soils. We speak of the natural fertility, or otherwise, of these lands, as that arises from resting on an open or a retentive sub-soil; and we are sure that even the most cursory observer will be convinced that all the best and most productive land is that which does not require draining, because it is by nature suitably dry; whilst all the worse and least productive land is that which does require to be drained, because it is by nature too wet. Thus by the exercise of ordinary observation we arrive at the conclusion, that nature has on all hands set before us examples of land in the most suitable state of dryness for cultivation; and therefore, the more closely the same mechanical condition is secured in those soils to which artificial modes of drainage are applied, the more nearly shall we attain that perfection which is essential. There are, of course, many gradations of quality in the lands alluded to, but this does not affect the standard of suitable dryness which, from them, we would establish.

It could but little serve the great ends of practical utility to attempt to lay down arbitrary rules of depth, distance, &c., which experience and the ordinary operations of nature contradict: for if the advance which has unquestionably been realized in the art of drainage has demonstrated any one fact more than another, it is that no one plan of operation is equally applicable and effective on all lands; but on the contrary, that each case must be dealt with according to the circumstances of soil, sub-soil, contour, fall and meteorological situation. This is the province of the experienced Drainer, and his skill consists in so applying the remedy as that the work shall be complete and durable, whilst the cost shall not exceed a remunerative amount. We have laboured on many occasions to show that, whilst the strictest economy is exercised, completeness and durability are essential; and that it is the interest of the owner to secure these, even if at some additional expense, rather than by any temporary saving to jeopardize them in the slightest degree. The cost of Drainage is, under the most favourable circumstances, such as to justify the anxious desire of the proprietor to reap the full and permanent benefit of the application; and to the operator who understands and feels an interest in the work it is not the less satisfactory to know that all the anticipated results have been attained. After passing through the several probations of sod, turf, stick, wood, stone, slate, and common tile drains, the settled conviction has at length been arrived at in England, that the only perfect and permanent system of Drainage is with drains at not less than three feet deep, laid carefully with machine-made pipe-tiles of suitable sizes, and when needful, having the joints covered by a collar of the same material. The cost of