

the working of land by Mr. George Guthrie, of Appleby, in Westmoreland, England. The specification of the patent was enrolled on the 24th of September last. The operation is performed, as we learn from the *Patent Journal* by a process of digging, resembling in some measure, the effect produced when performed by hand. The machinery employed in carrying out this system consists of a means carriage, part of which only is shown in the drawings attached to the specification. The carriage is supported on four wheels, to prevent its sinking into the ground. These wheels are so connected with the driving gear that a slow progressive motion is imparted to the whole carriage over the land. The digging instrument, which is a substitute, and performs in a similar manner to the spade, is what is termed a "grape," being an instrument with three or more broad prongs, which is capable of lifting a quantity of earth, and at the same time, does not afford so much surface to which the soil may adhere. This instrument is supported by a helve, like the ordinary instrument, which is a broad flat bar of iron, mounted in a suitable frame, in which it is free to turn on its axis, for the purpose of inserting or partially turning the grape during its action. Motion is given to the grape frame, partially of a reciprocating and curvilinear character. This is effected by means of a system of cranks and connecting rods. The engine communicates its motion in the first instance by a large spur-wheel to which are geared three pinions, on the shafts of which are placed the necessary cranks, these are connected by the several rods to the grape frame and are situated at such points from the periphery of the spur-wheel as to stand relatively in the necessary direction to the digging instrument so as to perform their several offices. The frame of the digging instrument moves in suitable guides, in an incline direction, in which it is free to oscillate on two bearings at about the middle of its length. The cranks disposed of as before mentioned, are also situated relatively to each other, at such points of the circle as to impart the necessary motion to the digging frame, to cause it to produce the required evolutions of the large spur-wheel of the grape, thus, supposing the instrument about to enter the ground, it is in nearly a vertical position, and is propelled downwards by one or both of the cranks; on entering the ground about halfway, one of the cranks—that is, the one connected with the lower part of the frame—passes the lowest point of its circle, and begins to rise, which is then drawing up the instrument out of the ground, while, at the same time, the tendency of the other is to carry it still further down. The machine having, at the same time, a slowly progressive motion, the combination of the whole of which causes the instrument, although not penetrating to any great depth, to completely enter the ground by a kind of scooping motion. The continued motion of the crank in advance now lifts the instrument up to nearly a horizontal position, which is maintained by both cranks rising at the same time. About the time of the grape attaining nearly the horizontal position another motion is imparted to it—viz., that of partially turning on its axis; this is produced by the flat bar or helve of the grape before mentioned, having a twist in it at a particular point: this performs the office of a screw with a coarse pitch. To produce the rotary motion a cross-bar is fitted to the grape frame or "gate" which is free to traverse lengthways therein. This bar has a slot, which receives the helve at its twisted part, which is fitted thereto in such a manner, that it may traverse on the twisted portion. Motion is given to the cross-bar at the proper time, by a crank, so as to cause the bar to traverse in the direction of the length of the helve. This traverse taking place on the twisted portion of the helve, the grape is thus caused to turn and throw off the soil lifted by the other motions, by connecting the slot bar with some stationary object. The grape or digging instrument is placed on

one side of the machine, and the several cranks are overhung, or on the ends of the several shafts. After moving off the soil, the grape then assumes its original position, in which it entered the ground, which is repeated as before, but at another point, sufficiently in advance to take another spadeful, by reason of the advance of the machine.

**PROCEED FROM A SINGLE GRAIN OF WHEAT.**—An experiment on the fertility of wheat has, during the past year, been carried out in the garden of Mr. Skew, a surgeon at Buckingham, of which the following is a correct account. On the 13th of July 1850, a single grain of wheat was sown in the garden; the plant came up in ten days, and grew luxuriantly till the 13th of September; it was then taken up and divided into slips, and replanted, and suffered to remain till the present year. The weather then becoming favorably wet, they were all taken up again and divided into no less than 114 plants, these being planted, were permitted to stand till the month of Aug., when they were productive of the amazing number of 820 ears of wheat, many of them full size, containing more than 60 grains of corn. The crop was gathered before it was fully ripened, as the birds attacked it in spite of revolving feathers and a protecting net. Whether the result of this trial will strengthen the opinion of those who contend for the thin sowing of wheat in ordinary field cultivation, must be left to the judgment of more practical agriculturalists, but of the amazing productiveness of the wheat plant under such treatment, any one may easily satisfy himself by repeating the experiment.—*English Paper.*

### Literary Notices.

**COMPARATIVE VIEW OF THE CLIMATE OF WESTERN CANADA.** By HENRY YOUNG HIND. Toronto. Brewer & McPAIL.

The wonder which Canada excited at the Great Exhibition shows plainly that even those who might have been expected to know somewhat of her resources were not at all prepared for the display there made. The Dumfries wheat, the Dundas blankets, and the Montreal and Quebec mechanism, spoke eloquently of plenty, comfort, and civilization. But something more requires to be done to remove those prejudicial impressions which have been formed in reference to the climate of the western portion of the Province. Without attempting to distinguish between the eastern limits of the county, and the general character of the western province, so delightfully situated amongst the Lakes, it has been set down that our winter is long, rigorous, and almost unendurable, and our spring glides rapidly into the insufferably scorching heat of a brief and fleeting summer, which is speedily consummated in a few days of mellow autumn. Such is the very general opinion regarding our climate, and the laudable object which the author has in view in the little work before us, is to aid in removing the unfavorable impressions which may have been formed in reference to the characteristics of the climate of Western Canada in its bearing upon agriculture. In the prosecution of his aim, he has happily adduced a variety of statistical facts which show that, from our peculiar position among the Lakes, our climate affords facilities for agricultural pursuits not surpassed in any part of this great continent. He shows

that the points in which the climate of Western Canada differs from that of Britain and Ireland are, 1st. In high summer means of temperature. 2nd. In its comparative dryness, and 3rd. In the serenity of the sky, and no one who has paid the slightest attention to the subject will doubt the correctness of his conclusions. These three properties, so essential to the ripening of grain, are so deficient in some of the more Northern parts of Great Britain, that it is not uncommon to see corn with a gigantic stalk of nine or ten inches cut down about the end of October as green as grass, purely because there is no sun to ripen it. Instead, however, of entering into the details which are so lucidly brought out, we would recommend the work to the perusal of every one interested in the welfare of Canada, and would give as an extract a few of the Author's concluding remarks:

Within five and twenty or thirty miles of Toronto, the better class of farmers consider thirty bushels of wheat to the acre an average crop, and this return is obtained in spite of all the imperfections of a comparatively primitive system of husbandry. If half the care were bestowed upon the preparation of land for wheat, which is devoted to that operation in Great Britain, fifty instead of thirty bushels to the acre, would be an average yield on first class farms. It must be borne in mind, that subsoil draining is unknown among our farmers; that top-dressing in the fall with long dung is never practiced, a proper rotation of crops scarcely ever adopted, frequent repetitions of the same crop general, farm-yard manure applied without any previous preparation, and yet, under these disadvantages of ART, NATURE, with her fertile soil and admirable agricultural climate, produces most abundant crops when she is not too grossly abused. How different a state of things to the east of the Lakes. Professor Norton, in his Appendix to Stephen's Farmers' Guide, says, that "in many of the Eastern States, where wheat was once largely grown, its culture has greatly decreased, and in some districts scarcely any is to be found, excepting an occasional small patch of spring wheat. It is common to ascribe this to the Hessian fly, to the prevalence of rust, &c.; but after we have made all due allowance for these causes of uncertain produce, the principal reason, in my judgment, is to be found in the deterioration of the land." The climatic adaptation of the Western Province to certain forage and root crops, is well deserving of notice. When ordinary care and attention is devoted to their cultivation, in the way of mere surface draining, and in the application of farm-yard manure, gypsum, or lime, they grow with remarkable luxuriance. White clover springs up wherever the virgin soil is stirred by the plough, or even exposed to the sun's rays, after the process of clearing the land of its forest growth. The red clover flourishes year after year, without diminution in yield, if sparingly top-dressed with gypsum or leached wood ashes. Certain varieties of beans, (not the common horse bean), such as the dwarf, French, and kidney beans, come to maturity with remarkable rapidity, and are at the same time very prolific. Some of the dwarf varieties are especially adapted for forage crops, or even for food, as in Germany and France. They may be sown in this country broadcast, as late as the middle of July; they produce most abundantly, and are well adapted to serve as a green manure, on light soils deficient in vegetable matter. Indian corn, as a forage crop, sown broadcast, has yet to be introduced. Jerusalem artichokes will bear mowing at least three times in the year, they will grow upon any kind of soil, and retain possession of the land with such singular tenacity, that a patch must be devoted to them alone. They derive nearly all their nourishment from the atmosphere,