are already aware that experiments have been made, and others are now being tried, to collect and concentrate the electricity of the atmosphere, with the view to stimulate vegetable growth in a greater degree than it proceeds in the ordinary course of nature. Following in the wake of the foregoing theory, I have taken the liberty to suggest the application of galvanism (thus named after its discoverer, Galvani) for the same purpose, either separately or in connection with atmospheric electricity, to which it is very similar in the effects it produces. The galvanic fluid is produced by placing two dissimilar metals in close contact with each other. Copper and zinc are generally chosen for the purpose. Any number of pairs of plates of those metals, properly arranged, constitute a galvanic battery, its power depending on the number of pairs of plates used, independently of their size. Such a simple contrivance is the prime moving cause of the electric telegraph, which, next to thought, travels with the greatest velocity—not less than 300,000 miles in a second. It is the same fluid that is now suggested to be employed in the field and in the garden, for the purposes before referred to; and I beg at once to describe a simple form of galvanic battery, called Volta's pile. Considering one lug of ground fully sufficient for an experiment, I will limit the size of the battery accordingly. Take 100 plates of copper, 2½ inches square, and the same number of zinc plates of the same size; also of the same size, an equal number of pieces of old woollen cloth. Then provide a strong wooden box, well pitched in the inside, open at top, wide and long enough to contain the pieces of metal when packed closely into it edgeways, in the following manner: place at one end a copper plate, then a zinc one close to it, then a piece of cloth, then copper and zinc, as before, continuing these alternations throughout; then, with a wedge, fix the pairs of metal closely to each other in the box. To the first copper plate solder a copper wire, No. 18, six feet in length; do the same by the last zinc plate; then with from 30 to 40 yards of the same kind of wire surround and cross in two or three directions the plot of ground, binding one end of the surrounding wire to that which is soldered to the copper plate, and the other end to that of the zinc plate: this will complete the galvanic circuit. Pour into the box salt and water, so as to make it three-parts full, and leave a portion of the metallic plates dry: the battery will then be in action, sending through the wires a current of the galvanic fluid, which is supposed to influence whatever is placed within the circuit of the wire. Such a battery will keep in action for a considerable time; and in order to renew its energy it is only necessary to separate the plates and clean them with sand and water, replacing them as before. To judge of the declining power of the battery, place the hand, moistened, between the points of the wire fixed to the copper plate and the end of the surrounding wire attached to it. Let this be done at first, when an acute sensation will be felt, as well to remove scepticism in regard to galvanic power as to enable the experimenter the better to judge of the condition of the apparatus. This battery is probably sufficient for a field of several acres; but I consider it necessary to bring to bear on a small spot of ground a large quantity of electric influence, in order to test it thoroughly and in a decidedly marked manner. To combine atmospheric electricity with galvanism, it is only necessary to raise a high pole, extending beyond the end of which, and attached to it, must be a pointed copper wire, the lower end soldered or firmly bound to the surrounding wire proceeding from the zinc end of the battery. The wire should be kept from the pole by being passed through some piece of window-glass or glass tubing, or some old silk, and the whole fastened to some projecting pieces of wood. These things are non-conductors of the electric fluid, and the whole of the conditions must be strictly attended to. As there are other methods of applying galvanism to the before-mentioned purposes, at a much less amount of cost, I beg to defer the consideration of them for another communication. Apologising for the length to which the present has unavoidably extended. I remain, Sir, your obedient servant. RICHARD WIKS.

Fordingbridge, May 13, 1845.

MANUFACTURE OF FLOUR.

The great secret of manufacturing good flour is in knowing how to reduce it to such a degree of fineness as will render it fit to make good bread—to separate it entirely from the bran, and to cool it so effectually before it is packed, that time will not render it sour, or putrid. It was long before men discovered the art of reducing grain into flour, and it was longer before the discovery was brought to anything approaching to perfection. Pliny informs us that barley was the only species of grain at first used for food, and that even after the method of reducing it to flour had been discovered, it was long before mankind learned the art of converting it into cakes. At present all kinds of grain are reduced to flour with equal facility, and extensively used as food by the inhabitants of those countries to which they are peculiar, but the art of manufacturing good flour of wheat, seems to be still a secret even in countries where that species of grain is the common product of the soil. We have often heard the farmers of this District say that the Bay of Quinte flour is ground *too fine!* But this we believe to be impossible, if the stones with which it be ground are in proper order. If they are not, it would be equally as *impossible to make good flour*, no matter how coarse it may be ground Let us explain.—The face of the stones must be put into such order that they will first *cut the grain* into pieces, and *then pass it between them in such a* manner that none can escape without being ground to a *certain uniform* degree of fineness. The action of the stones upon grain is like that of scissors upon cloth; but if the stones be dull, or the furrows too shallow, the wheat instead of being cut will be bruised—the bran will be ground up with the flour, and the vital principle or *gluten* so essential in the making of good bread, will be wholly destroyed. When the stones *are sharp*, fewer revolutions are required to grind a given quantity of wheat, less friction is produced and consequently *less heat*, and where the furrows are of a sufficient depth, and have proper draught, they admit a current of air sufficient to keep the flour cool during the process of grinding. The great evil then lies *not in grinding the flour too fine*, but in grinding it too fine with *dull stones*. In bruising the wheat instead of cutting it, and in heating the flour to such a degree by the increased friction, occasioned by the superabundant revolutions of the stones; that its constituent properties are entirely changed.

The wheat on passing in between the stones is subject to the action of two forces, the one called *centrifugal* which forces it from the centre to the verge, and the other called *centripetal*, which constantly solicits it towards the centre. These combined forces give no additional power to the machinery, nor have they any real power in themselves but in grinding good flour, a great deal depends upon a thorough knowledge of the laws by which they are governed. One great principle of the laws of central force is, that "equal bodies describing equal circles have equal central forces," but the farther the wheat is removed from the centre of the stone the less will it be acted upon by this propelling power. Hence it is necessary that the draught of the furrows in mill-stones should increase as the central force decreases and *vice versa*. The draught must be in exact proportion to the size and velocity of the stone, and the furrows must cross each other near the centre, at a much greater angle than near the verge, because the *centrifugal* force towards the former is much greater than towards the latter, and the motion which this force gives the flour has a tendency to move it outward and will be in inverse proportion to the diameter of the stones. It is essentially necessary that the foregoing laws be observed because the centrifugal force of the flour will vary according to the square root of the velocity of the stone. However if an error be committed in laying out the furrows, it may be corrected by deepening them. The less the draught, the deeper must be the furrow, and *vice versa*, otherwise some of the flour will be ground, or bruised too fine, and some will escape being ground at all. Evans says that the furrows of a stone should cross each other near the centre at an angle of 75 degrees and near the verge at an angle