

Irrigation for Grass Lands.

We are again amid the fervid heats of July, the hottest and oftentimes the driest month of the year. One now only needs to look over the parched fields, especially in a dry season, to understand the need of irrigation. Even in seasons of average moisture we could use to advantage many times the quantity of water that falls from the clouds. It would always make the hay crop a certainty, and often quadruple the yield of grass in the irrigated fields. It was not strange that the Romans living under the bright skies of Italy, early found the advantage of damming their mountain streams, and turning them at pleasure upon the meadows below. It would seem from the account of Virgil, that whole districts were famous for the crops procured mainly by this method. Irrigation must have been an art well understood long before the Christian era. Is it not strange that in a climate quite as much subject to drouth as that of Italy, irrigation should be almost unknown among us? With a climate that demands it, and with unrivalled facilities for its practice, in most of the northern States, not one farmer in a thousand has availed himself of the treasures of water within his reach. Nothing could better show the neglect of agriculture among us as an art than this fact. Few people are more ingenious than ours, or more quick to take advantage of the facilities which Nature offers to save labour and to create wealth. We abound in all useful inventions and labour-saving machines.—We dam the streams to turn innumerable wheels for manufacturing purposes; to make fish-ponds and adorn our ornamental grounds; to make model lakes and raise our annual crop of ice, for the delight of Europe and the Indies. But how rarely is a stream turned from its course to fertilize the land and increase our harvests.

Few have any conception of the value of water as a fertilizer. Many turn the streams made by rains in the highways into the adjacent fields, but they attribute all the increased luxuriance of the grass to the matter deposited. No doubt street refuse, such as the rain washes into the meadow, is an excellent fertilizer, but the rain itself contributes to the result. Far beyond the line of deposit, you see the effects of the water.

Just how the water operates to fertilize the soil we may not be able to state. Of the fact there can be no doubt. We see the power of water to make crops in every drouth that comes. There are fields of light gravelly soil, whose crops of grass are nearly doubled in wet seasons. It is pretty safe to infer that water made the difference. Water is a powerful solvent, and helps the decomposition, not only of vegetable fibre in the soil, but of its mineral constituents. You can not wash a stone so clean that water will not act upon its surface, and after a few hours wash away something more from it. It is prob-

able that the water is all the while preparing plant food from the soil where it is present, and of course the more of it we pass through the soil, the more nourishment the roots of plants are enabled to take it up.

We have recently examined two small valleys, flowed for skating during the winter, and drawn off in early spring. In both you can detect the water line in winter by the greater luxuriance of the grass. Both streams that fed these ponds are dry, or nearly so, in summer, and never carry any very large volume of water. The basins that contain the water are small, and mostly covered with grass, so that they are turbid even in rains. There is little appearance of sediment when the water is drawn off in the spring, and it is nearly certain that the beneficial effect is mainly owing to the presence of water in the winter season. If the water helps the grass crop under these unfavourable circumstances, it must help it much more when it bears a rich deposit, and is applied at the growing season.

We have in this State two examples at least, of the successful application of irrigation to farms—that of A. B. Dickinson, of Steuben Co., and L. D. Clift, of Putnam Co.; accounts of which were published in the *Agricultural Transactions* for 1855. In both these cases, the method is simple and the expense not beyond the means of the most thriving farmers who have streams convenient for this purpose. In both, the results are all that could have been anticipated. The method is to dam the stream at a point above the lands to be watered, and to turn it on at pleasure, by means of a gate and channels of distribution. These main channels are furnished with side conduits which are merely furrows made with the plow, and having just descent enough to carry the water. When the water is turned on, these channels overflow, and the water is distributed over many acres.

Mr. Clift pursues his irrigation even in winter, and it is this feature probably that will be looked upon with more hesitation than any other. The water freezes sometimes as it flows, making a broad field of ice a foot or more in thickness, where it remains until dissolved by the suns of spring. It is probable that the ice affects the soil thus protected just as the ice-covered pond does. It is completely shielded from the alternate thawing and freezing; the frost does not strike in deeply, and comes out very early in the spring. It is his testimony that "the grass in all such places is first in spring, and grows with great rapidity." He also improves other seasons when the stream is charged with sediment, and spreads it over the land as a top dressing. Besides the sediment which is carried in the water, a good deal collects in the bottom of the pond, which is carted out when the water is drawn off, and makes excellent manure. This is spread upon portions of the field that receive the smallest supply of water. He cuts above a hundred tons of hay on forty acres of land,