

The Farm.

OUR SOILS.—Professor Huxley once wrote a capital lay sermon upon a lump of chalk. An equally good sermon might be preached upon a clod of earth, and this fact has been pressed upon us more strongly than ever by the appearance of Mr. Darwin's work upon earthworms. The great naturalist has added another side from which we may view the raw material of our fields, and exhibited to us yet another natural force which has tended towards the formation of fertile soils. Perhaps few farmers trouble themselves much as to the origin of the soils they till. It is enough for them that they can produce so many sacks of wheat or tons of roots. But the origin of anything is always a point of interest, and that of our soils especially so, as they lie close at the very foundations of life itself. As every living thing returns to the earth, so also is the earth in a secondary sense the mother of us all. If we wish to know how good and bad land, clays and sands, chalks and peats were formed, we must ask the geologist. That they were formed and had a beginning is certain, so that we must not for a moment think that soil has always existed. Far from it. We know how it came into existence, and from what sources it was derived.

If we examine a soil we find that it is composed of loose, dark-coloured material, interspersed with mineral fragments of greater and lesser size. The nature of the soil will be found to vary with the situation in which it is found and from whence it is taken. If it is removed from the slopes of a chalk hill it will be found chalky in its character; if from a district in which the underlying rock is red sandstone it will be found to be red, and to partake of the nature of the rock. Investigation clearly points to the fact that all soils have been derived from rocks, and that they are loose and crumbling because they are decayed and broken down rocks. The hard intractable mass, whether of granite or hard sandstone or softer chalk or clay, is the first stage. These rocks are acted upon through countless years by certain natural forces, under which they break down, and finally are converted to soil. Anyone who examines the loose matter which accumulates at the base of quarries and precipices will see examples of soils now forming. The way in which this important work of soil manufacture is carried out in nature's laboratory may be thus described—A hard rock is exposed for years to the action of the air, of moisture and of changes of temperature. The air, being charged with a small proportion of carbonic acid gas, acts in conjunction with water. There is formed by this union a very weak solution of carbonic acid in water, which is a solvent under whose action the hardest rocks will at length give way. Minute as the effect may be, it gradually becomes manifest by the erosion of the surface and the effacement of tool marks or inscriptions. This effect is further increased by the action of alterations of temperature from frost to thaw. The expansive power of water when it changes from the liquid to the solid state is well known. It is the cause of many phenomena, and explains the beneficial action of frost to arable land. The same force is very destructive to building stones, to brickwork, and to drainage tiles. It is the cause of landslips, and to it is due the weathering of rocky surfaces and the crumbling of the faces of quarries. Another disintegrating force of even greater power is that of running water. Mountain streams wear through the hardest rocks and form gorges of terrific depth. If the question is asked, what has become of the vast quantity of matter worn away by tens of thousands of mountain and lowland streams? the answer is, that it has gone to form tracts of fertile soil in the valleys beneath. Ice is a great wearer of rocks when it is massed together in the form of glaciers, and grinds down the mountain gorges which hold it. The wearing and grinding action of ice is well known to all tourists. The action of these forces has, no doubt, resulted in the formation of soils. In some cases they have been applied in such a manner as to simply disintegrate the surface and yield a soil intimately related to and derived from the rock which underlies it. In other cases they have been so applied that the resulting soil has been transported as fast as formed to a distance. Running water is the agent by which this transportation is effected, and as a result we find deposits of rich soil in valleys, and along the banks and at the estuaries of rivers.—*Agricultural Gazette*.

THE GARDEN.

ON THE EFFICACY OF TRENCHING.—Before manuring and trenching vacant ground it is necessary to decide on the rotation of crops to be cultivated on it during the ensuing summer. This arrangement should be made, not for one year only, but for three or four years. One of the first principles to be attended to is that no annual crop be grown for two successive years in the same plot of ground. Another thing should be attended to, and that is, that crops should not be allowed to follow each other which are liable to be preyed upon by the same kind of insects, as the increase of these pests are encouraged, to a great extent, by putting into their way the very food which they are most fond of. It is important that both the manuring and the depth of the trenching be regulated by the requirements of the crops, and the rotation should be so arranged that the ground be not trenched to the same depth for two successive seasons, but so that different portions of the soil be brought to the surface in turns. The perennial or permanent crops, such as asparagus, sea-kale, rhubarb, &c., will, of course, form a class by themselves, as they do not require a change of situation for many years; but when a change is necessary with any portion of them, the ground from which they are removed will fall into the ordinary rotation in the way of a regular exchange. The working and turning over which the celery soil undergoes acts admirably in preparing the ground for deep-rooted plants, such as parsnips, carrots, turnips, and onions, and in the following year the same ground may be devoted to the cultivation of cabbages, cauliflowers, broccoli, &c., whose roots are confined much

nearer to the surface. Should the vegetable garden be large enough to allow the cultivation of a portion of the potato crop, it will form a fourth course in the rotation, and will come in after the cabbage tribe. Acting on this system, cabbages have been planted during the autumn on ground which has been occupied by early summer turnips; and the ground which now requires trenching is that from which the late turnips, carrots, beetroot, &c., have been removed, and which will next spring be planted with cauliflowers, cabbage, &c. Preparations for these should be made by trenching in a heavy dressing of manure, which will serve for that and the succeeding crop. The trenching of the ground should be carefully done. We will briefly describe our system of performing the work. On the plot of ground to be trenched we cart a sufficient quantity of manure, which should be left in heaps to be used as required. Then commence at the lowest end of the ground by opening a trench two and a half feet wide and the same in depth. This earth should be carted to the opposite side, where the work is to finish. Mark off with the garden line two and a half feet of the top spit, which, together with all loose soil, should be turned into the bottom of the trench. Over this place a good covering of manure, then another good spit of cart, which will deepen the trench to the required depth of two and a half feet. The soil carted out of the first opening will fill up the last trench. Avoid trenching in severe frost, as the digging in of frozen earth will chill the ground and keep it cold for a long time, and retard the sowing of vegetable seeds. It has been often maintained that if the subsoil of a garden is hungry poor stuff it ought not to be brought to the top by trenching, but few greater mistakes are made than that of leaving a bad subsoil undisturbed. It is, perhaps, the worst possible advice to give in some cases, if by trenching the gardener will only understand the ordinary process of putting the top spit of good soil at the bottom, and bringing up the bottom spit of bad soil to the top; but the quality of the top and bottom soil ought to decide how the trenching is to be performed. For example, let us take the worst possible state of ground for trenching operations—bad, poor, sour subsoil, which in its present state will grow nothing well. A little of it might be brought to the top every time the earth is dug, because, exposing even bad soil to the atmosphere will improve it, and, if good earth reached only ten or twelve inches down, this top soil, when we begin to dig, must be removed one trench wide for the first operation, for the purpose, as already stated, of filling in the last trench left. The soil of the first trench being removed for a start in ordinary digging, the next spit dug all along will fill it up, and the ground would be merely turned over; but before we go at the second spit it would be wise to loosen the subsoils with a steel digging-fork, for next to bringing it to the top loosening it at the bottom is best; but taking out about two inches to put on top of the good soil will be found an excellent mode of improving the ground permanently. Then dig the second spit along the space to be trenched and throw it into the trench, loosen the bottom again, and throw two inches of the earth on the top of the good soil. Continue this all through, one trench after another, until it is all finished, and the result will be that a small quantity of worthless stuff will become by exposure to the atmosphere a valuable and useful soil.—*Dublin Freeman*.

CHESTER A ARTHUR AS PRESIDENT.

THE *New York Sun* thus outlines the policy of the new President: "During more than half a century after the organization of our national Government no President died in office; and there came to prevail among the common people a semi-superstitious belief that any one holding that office bore a sort of charmed life, as many also believed of Gen. Washington, on account of his many marvellous narrow escapes during the Revolution.

The sudden death of Gen. Harrison, in 1841, just one month after his inauguration, broke this spell. But though Harrison's death was followed by the death of Gen. Taylor, sixteen months after his inauguration, and, later, by the assassination of Lincoln, the American people have not yet become sufficiently familiarised with the idea of a President's dying in office to give much effect to it in nominating and electing candidates for Vice-President.

Here is Gen. Arthur; though his title of General, amid the thousand of soldiers of the present day who have seen real service, is little more than a purely ornamental prefix to his name; a gentleman amiable and sensible enough, but whom probably not one man in America ever thought of for President; now, through the terrible crime of Guiteau placed in that high office with almost an entire term of four years in prospect, should he himself live so long.

While Mr. Arthur is not a man who would have entered anybody's mind as a direct candidate for the office, it is not at all certain that he will not make a successful administration. He is a gentleman in his manners, neither obsequious nor arrogant. His bearing is manly and such as to prepossess in his favour all whom he meets. Truth in speech and fidelity to his friends and his engagements form a part of his character. He has tact and common sense. Of the three former Vice-Presidents who have succeeded through the death of the incumbent to the Presidency, he bears much more resemblance to Millard Fillmore than to Tyler or Johnson.

The greatest objection, by far, that can be brought against Mr. Arthur, is the fact that he was a warm and earnest supporter of Gen. Grant for a third term.

This, however, in the nature of things, may now be expected to work its own cure. The possession of the Presidency will remove the scales from his eyes, and he will soon perceive the folly of running Gen. Grant for a third term, and the superior wisdom and expediency of running instead a certain man named Arthur for a second.

Mr. Parnell's mother has said that her son's imprisonment was in her opinion almost the consummation of his labours and aims, and would materially benefit the Irish cause. She intends going to Ireland to visit her son daily in his confinement.