

at a convenient angle, served as a handle, being guided by the plowman's left hand, while he managed the team with his right. With this relic of the good old days, the peasant may have annoyed and irritated a road of ground per day to the depth of three inches; and, as care is taken not to afflict in this fashion any field that cannot be irrigated, he may possibly, by the conjunction of good luck with laborious culture, obtain half a crop. It is a safe guess that this cultivator, living the year round on black bread moistened with weak vinegar or rancid oil, because unable to live better, cherishes a supreme contempt for all such quackery and humbug as book-farming.

The display of Plows in the Palace of Industry I may have alluded to, but I am not yet done with it. It is therein perfectly demonstrable that the same expenditure of human effort and animal muscle which is now employed to disturb the earth indifferently to an average depth of five inches would suffice, if properly directed, to pulverize the same area thoroughly to the depth of ten or twelve inches, increasing our annual harvests by at least twenty-five per cent and affording a safeguard against the evil influences of both wet and dry seasons. A few enlightened minds here are contemplating this result; the great majority of French farmers either never think on the subject or else regard it much as one of our own inveterate blockheads—of that sort which not only knows nothing but glories in it—expends his substitute for wit on any meeting of a Farmers' Club.

France has naturally a magnificent soil. I prefer it, all things considered, to that of our own Western States. We have much land that is richer at the outset, but very little that will hold its own in defiance of maltreatment so well as this does. Lime abounds here in every form—the railroads are often cut through hills of loose chalk—and very much of the subsoil in this vicinity appears to be a rotten limestone or gypsum, but is said to be a marine deposit—proved such by the infinity of shells therein imbedded. There is not a particle of stone in the surface soil; the rotten gypsum is, for the most part, easily traversed by the plow, though at a depth of ten to twenty feet the same original formation may be found hard enough to quarry into building-stone. To re-enforce such a soil, after the exhaustion produced by a hundred crops in succession, it is only requisite to run the plow two inches deeper than it has hitherto gone—a process urgently desirable on other grounds than this. I never before observed land so thoroughly fortified against the destructive tendencies of human ignorance, indolence and folly. Then the Summer of France, as compared with ours, is cool and humid, exposing grain-crops to fewer dangers of smut, rust, &c., and breeding far fewer insects than does ours. (O that there were some power in America adequate and resolved to protect those best friends of farmers—the birds—against the murderous instincts of every young ruffian who can shoulder a musket!) I have seldom seen finer Wheat than grows profusely around Paris, and I think this region ought to average more bushels to the acre in the course of a century than any part of the United States.

But French genius and talent do not tend to the soil. I must have already observed that the "Imperial" School of Agriculture at Grignon, though twenty-eight years old, with

1,100 acres of capital land, a choice stock and well adapted building, enters on its twenty-eighth year with barely seventy pupils. A kindred testimony is wafted from a "Reform School" in the western part of the country. To this school young reprobates are sent from the adjacent cities and made adepts in Agriculture as a just punishment for their sins; and its last official report boasts that the school has been conducted with such wisdom and success that over half of its graduates have enlisted in the Army! There's a climax for you!

—The Agricultural Department of the Exhibition contains little by which intelligent farmers could be instructed. Samples of choice Wheat, Oats, Peas, Beans, &c., are very well in such a show, and may stimulate some cultivators to try to equal them, but do not tell them how the thing is to be done. I have already incidentally spoken of the Plows other than English as an ill-favored lot—those of France only less irrational than some competitors from other portions of the Continent. I judge one from Norway will take any premium which may be awarded to the worst. The chief anxiety of the contrivers would seem to be, that each shall be thoroughly guarded, at whatever cost, against running too deep into the ground, though to that excess they manifest not the slightest inclination. It is very plain that the makers of these Plows believe all the earth which lies more than six inches from sunshine very noxious to growing plants—as some of it may be while it remains unstirred and unstirred since creation—but if so, that seems to me a very urgent reason for turning it up to daylight and giving it a chance to amend. I do not perceive a steam-plow among the novelties exhibited, but we shall not have to wait many years for that. Many of the newer harrows evince respect for the truth (which I believe has already commended itself to the approval of most enlightened cultivators in America) that the pointed, wedge-shape tooth is radically vicious, tending to compact the soil which it tries to pulverize and loosen. Harrow-teeth based on the principle of the plow and the cultivator, cutting easily, lifting and turning over all the soil that they disturb, are evidently coming into fashion.

Draining begins to fix the attention of the judicious few in France; a cheap treatise on its importance and processes has just appeared from the pen of one of the Professors at Grignon, and a tolerable sample of a tile-drain is laid down in the Agricultural Exhibition. Unlike those to which I am accustomed, in this drain an independent collar or broad ring (say three inches wide) loosely covers each junction of the tile, not so much to prevent their filling up with earth as to keep one from sinking below or rising above the other so as to stop the flow of water. The material is of course that of the tile. I should think this collar needless where the ground is firm and the tile well laid, and ineffectual elsewhere; but it is said to be considered worth its extra cost by those who have tried it.

Prof. John Wilson, well known in America, assures me that the tile-laying machine, of which only drawings and descriptions, so far as I am aware, have reached our country, is commending itself to the judgment of British improvers. This machine, now worked with moveable steam instead of horse-power, takes up its position at one side of the field to be drained, and commences the first drain at the point opposite on the other, slowly drawing

thence to itself a chain, to which is attached an apparatus which cuts a mere crease from the surface downward to the required depth, at which it makes a hole barely larger than the tiles, which closely follow on a string, being firmly attached to the perforating apparatus, and paid out from the starting-point just as fast as required. Thus each foot of the drain is perfected the minute after it is begun, while the labour of throwing out and replacing several cubic feet of earth for every foot of drain is obviated. Obviously, this would not answer in a rocky and in a mry soil, though in the latter this mode of cutting would tend to give firmness to the earth immediately surrounding the drain, at least for a time. I shall try to see a machine of this sort at work in England, and I wish some extensive, thrifty, improving landowner would import or construct one. On the broad prairies, or on the fertile intervals of Western New York, it ought to work well.

—It is unsafe to condemn what you do not fully comprehend, but many of the European contrivances for mowing, reaping, &c., by horse-power, seem absolutely puerile compared with those known in our country. So the machines for thrashing and cleaning grain here exhibited seem generally such as we have for the last twenty or thirty years been superseding by better, and some of them clumsily made and in bad condition, as if they had been brought here from some old lumber room, without cleaning. This is not what one expects or is accustomed to see in Paris. On the whole, I do not believe any decided impulse will be given to Agricultural improvement in France by the Exhibition, though in nothing more has France more pressing need of progress.

Yet let me not close without a tribute to the enlightened few in and near Paris who are making most spirited efforts for such improvement, regardless of the flouts and sorry jokes wherewith stibborn ignorance is ever set on to oppose such efforts. At the head of these laborers for human good I place the working members of the Society founded here last Winter under the auspices of the philosopher St. Hilaire, which has for its object the domestication of animals hitherto useless to man, and the introduction to France of those which have been proved useful in remote regions, but have not yet been naturalized here. (The attempt now being made by the U. S. Government to introduce the Camel and the Dromedary to the wild, scarcely peopled region which separates Missouri from California is far narrower, but of the same nature with this.) The acclimation of Plants also is likewise to be vigorously prosecuted, and I learn it already gives promise of important and not distant results. An edible root from China may be relied on to take the place of the Potato, should the disease by which that root has been afflicted for the last ten years prove incurable; while a new and far harder Silk-Worm, has been discovered in Australia, which will thrive on the foliage of the oak and other trees common to our forests, producing therefrom a staple quite as serviceable, though not quite so delicate, as that for which Europe was originally indebted to Eastern Asia. The absolute value of these and kindred additions to Man's available resources remains to be settled, but none can seriously doubt that many blessings, hitherto unrealized, will yet crown the peaceful labors of Science impelled by Philanthropy.

I have just had a conversation with Mr.