

therefore unfit to eat. M. Hoolbrenck takes a bottle with the bottom broken off, and gives it a strong coating of whiting. With this fragment of a bottle thus prepared he covers each shoot of asparagus as it makes its appearance, thus preventing the admission of air and light. By this means all that part of the asparagus so protected becomes as edible as the upper part. M. Hoolbrenck treats the alianthus, or Japan varnish tree in the same way, in order to provide a larger quantity of food for the new species of silkworm that feeds upon it, and as this insect thrives in the open air, he protects it from birds by means of nets.—*Galignani*.

[There is nothing new in the practice of bending the branches of fruit trees down to cause them to send out fruiting buds. We remember seeing in England the branches of a pear tree bent in the manner described nearly twenty years ago.—*Ed.*]

The Harvest.—Increased Fertility of Land.

The grain crops of the country are in all probability worth £20,000,000 to £30,000,000 more this year than they were last year. We shall certainly arrive at the knowledge of one great class of the causes of fertility if we inquire what has occasioned this great instance of its increase. Has it been owing to an extension of land drainage? That often repays its cost in a few years, although it is sometimes allowed ten or fifteen years for that purpose in agreements between landlord and tenant. But how many millions spent on land drainage would create an increased value of grain to the extent of £20,000,000 in a single season? Rapidly as land drainage is proceeding, so great an increase of fertility cannot be set down to this as its efficient cause. Can it then be attributed to improved tillage? Unfortunately for that idea the autumn which preceded the crop of 1862 was much better for tillage work than that which preceded 1863. There has rarely been a finer autumn than that of 1861 for tillage operations, but the crop of 1862 was generally inferior and below the average. Can it then be set to extra manuring? How many million pounds' worth of guano put on the land in spring will produce £20,000,000 of grain in autumn? It would need, we fear, almost all the contents of the guano islands spread upon the land at once to produce an effect so great. Notwithstanding all our boasted advances and improvements in all farm operations, this great increase in the year's fertility is not a work of art at all. It has arisen out of causes altogether independent and outside of human effort, will, or science. Here then we have pointed out to us one great class of facts affecting fertility which are altogether outside of agriculture—including the whole series embraced between climate on the one side and constitution of the plants we grow upon the other. The fitness of climate to the constitution of the plants we grow (both being entirely beyond human control, and to be simply accepted as absolute and inevitable facts) is one great cause of fertility. When the farmer has chosen the plants best adapted to the circumstances of his cultivation the outer and maximum limits of their productiveness are fixed for him—they are independent of any power he can exercise. Up to those limits he can force his will upon the crops he grows, but beyond those limits he cannot

urge them. All the subsequent causes he can bring to bear are in the nature of opportunities given to the plant—its power to use those opportunities is limited by the climate of the year, and by its own essential character and constitution. Of course the wonderful produce this year is to some extent a work of art—if the difference upon the whole between the harvest of the present season and that of 1862 cannot be put down to deeper ploughing, more perfect drainage, more liberal manuring, or to any difference in the efforts of the farmer, there are plenty of differences between particular farms and fields either of this year or of last which can. The reports which we have received of the current crops speak of barley in particular as being extremely various; where early sown it has prospered, but in the hands of those whom the reporter calls "afternoon farmers," *i. e.*, where sowing has been delayed, it has failed. And in the previous year the wheat harvest was extremely various; on undrained clay lands it was a failure, while on well drained land and well put in it yielded well. If, therefore, one great class of circumstances affecting fertility, including all those particulars which make up the climate of the year, and the natural character of the plant—are beyond us, there are many others, including both the adaptation of the soil to the plant and the treatment of the plant itself, according to its natural character, by which we can make or mar a crop. In Mr. Caird's reports of farms, published several years ago in the columns of the *Times*, there is an instance given illustrative of the rise in the fertility of land during successive weeks of years during which the average climate must have been nearly constant. The wheat crop in the seven years preceding 1839 averaged twenty-five bushels per acre on the farm of Mr. Blyth, near Burnham, Norfolk. In the seven years ending 1846, it was twenty-nine bushels; in the next seven years it was thirty-six bushels per acre. In like manner, during the same period, oats had yielded thirty-four, fifty-seven, and sixty-eight bushels per acre, respectively, and barley had yielded thirty-one, thirty-three, and forty-five bushels per acre. Mr Caird's remark upon this history is that the great increase in the period since 1846 may be attributed to the use of artificial manures, as a direct application to every crop, which has since that time become a universal practice. Here then, is one great and obvious way in which fertility is in our hands; we can feed our plants up to the limit of their power to assimilate this food; and that this is not always nor generally done is plain from the fact that some increase in productiveness almost always follows the application of additional manuring. Up to the extent which the living powers of the plant permit, and they are determined by the climate of the season, we can urge its growth by the liberal supply of all its wants. Does fertility depend on the consistence of soil, we can marl light lands, we can burn clays, we can harden by the sheep fold and the roller, we can lighten by the scarifier and the plough. Does it depend on full opportunity being given to rain water to traverse soil and subsoil and feed the roots of plants, we can by underground channels which carry off the water as it sinks, preserve its continual circulation throughout both. Does it depend on the natural contents of the land being fitted for