

thing. You wish to know how to pack the greatest amount of bulk in the smallest space. The forms of cylinders leave large spaces between them. Mathematicians laboured hard for a long time to find what figure could be used so as to lose no space; and at last found, that it was the six-sided figure, and also that a three-plane ending in a point, formed the strongest roof or door. The honey-bee discovered the same things a good while ago. Honey comb is made up of six-sided figures, and the roof is built with three-planed surfaces coming to a point.

If a flexible vessel be emptied of air, its sides will be almost crushed together by the pressure of the surrounding atmosphere. And if a tube partly filled with fluid, be emptied of air, the fluid will rise to the top. The bee understands this, and when he comes to the cup of the tall honey-suckle, and finds that he cannot reach the sweet matter at its bottom, he thrusts in his body, shuts up the flower, and then exhausts the air, and so possesses himself of the dust and honey of the flower. The feet of flies and lizards are constructed on a similar principle, and they thus walk with ease on glass or ceiling. Their feet are so made as to create a vacuum beneath them, and so they have the pressure of the atmosphere, fifteen pounds to the square inch, to enable them to hold on. The cat has the same power to a less extent.

Plants require the sunlight, and some flowers turn themselves towards the sun, as it travels round from east to west. The sunflower does this, and so does a field of clover. The facts, though we have not yet got at the reason of them, are still extremely interesting.

The Virginia creeper throws out tendrils in the form of a foot with five toes; each toe has a large number of hairs or spines, which entering the small opening of brick or lime, swell and hold on; but when decaying, they shrink, and the plant falls off. The vanilla plant of the West Indies exhibits a similar construction, except that it winds itself around other objects.

The gastric juice is worthy of remark. It is a tasteless, colourless, inodorous, limpid fluid, like water, and is adapted, in different animals, to different purposes. In the hyena and other carnivorous animals, it will dissolve dead flesh. These creatures then live upon other animals, and even bones are soluble in their gastric juice, while it will not dissolve vegetables at all. On the other hand some animals live entirely on vegetables, and their gastric juice will not dissolve animal food.

Man cannot alter the nature of an animal by changing its food. It will still belong to the family. In this particular, bees are better instructed. When they lose their queen bee—which is an entirely different animal from the working bee—if you present another to them within twenty-four hours, they will not accept of her nor obey her. They prefer taking an ordinary grub, before it has become a flyer, and feeding it with a particular food, and treating it in a particular way—and when it leaves the grub state, it becomes a queen bee, and they always suffer themselves to be governed by her.

The habits of ants are extremely curious. We all have heard of ant houses, sometimes twenty feet in diameter, filled with halls and rooms of great size and strength. These and beaver dams, are constructed upon strictly mechanical principles.

In some insect species, the males have wings while the females have none. This is the case with the glow worm; and the female has the property of emitting a phosphorescent light, and were it not for this, the glow worm would never find its mate.

THE MODEL FARM OF OHIO.

(From the Ohio Cultivator.)

The model farm of this State contains 100 acres, 75 of which are well cleared, and the whole under fence. 60 acres are embraced in one enclosure, and this includes all the arable and meadow land upon the farm. The buildings are all of stone, neat, durable, and commodious. The dwellings are not large, but capacious enough for the use of the family, and a room and a bed or two for an occasional friend. The kitchen and stables are supplied with water from the same spring. No stock but hogs and sheep are permitted to graze. The cattle and horses are constantly kept in their stalls, and are always in good order. The cows are at all times fat enough for the butchers, and the growing stock: at two years old attain the weight of ordinary steers at four. During the summer they are soiled with green food. consequently, 20 acres in grass is sufficient to keep four horses and ten cows with their offspring, until the young stock

are ready for the market at three or four years old, when they average him \$30 per head. Of these he makes it a point to sell ten head a year. For his stock he raises about one acre of roots, sugar beets, mangel wurtzel, and turnips, each year, which yields him on an average about 1500 bushels. Of corn he cultivates five acres a year, which, by proper culture and judicious rotation, yields him yearly 500 bushels. Five acres in wheat gives him yearly 150 bushels. Five acres of oats, 300 bushels.

He has an orchard of eight acres, in which he has 200 apple trees, 25 pear, 25 plum, 100 peach, and 50 cherry trees. This is divided into four compartments of two acres each. Two of these he ploughs up every year, and in the spring plants them with Jerusalem Artichokes. Here he keeps his hogs. In the two that are not ploughed, he has a clover and orchard grass ley, in which the swine feed from the middle of May to the first of August, when they are let into one of the Artichoke yards, and range at will into the two grass yards, and this till winter, when they are passed into the second Artichoke yard, where they are kept till the grass has sufficiently advanced in one of the fields to turn them into that. Thus, upon grass, roots, and fruit, the swine are kept so thrifty, that a few bushels of grain are sufficient to make them ready for the butcher. In this way he manages to kill thirty hogs a year, which will average 400 lbs. each. He gives them beet wintering.

His sheep range principally in the woods, with a small pasture of five acres. He keeps 75 head, which yield him 300 pounds of wool a year.

As this farmer has raised a large family, and raised them all well, having given each child a good practical education, I was curious to look into his affairs, and as he keeps a regular account current of his transactions, it gave him no trouble to inform me of the result of this mode of proceeding, which is briefly as follows:—

<i>Product of the Farm.</i>	
10 Beef Cattle, average \$30 per head, . . .	\$300
25 Hogs, at \$12 per head,	300
200 bushels Corn, at 25 cents per bushel, . . .	50
Product of Sheep,	100
Product of Dairy,	200
Product of Orchard,	300
Other and smaller crops,	100
	\$1,350
His hired labour cost him on an average per annum,	\$300
	\$1,050

Thus, from 100 acres of land, even in Ohio, this man has been able to lay by and invest at interest, on an average, \$500 a year, for the last 12 years. He has now some eight or ten thousand dollars at interest, and home is a home indeed. Who does better on a farm of 1000 acres? Or who has improved his condition by going west, more than by staying here? Of course, like others, he has suffered somewhat from unfavourable seasons in some of his crops, but his correct system of culture and intelligent management generally obviates every difficulty which springs from this source; and as his crops are always better than his neighbours, the advance in price more than makes up the deficiency. His system of saving and making manures turns everything into the improvement of his soil, weeds, ashes, the offal of his stock, soapstuds, bones, and every thing that will tend to enrich it, are carefully saved and properly applied.

The history of this man is brief, but to the farmer interesting. He began with the patrimony of good sense, sound health, and industrious habits. Excellent so far. In 1830 he had six children, and \$3,000 in cash. He bought this farm in a state of nature in 1830; for which he paid \$400. He expended \$400 more in clearing his land, in addition to his own labour. He first put up a temporary cabin in which he moved his family. \$1000 he put out at permanent annual interest, and the remaining \$1,200, with the earlier profits of his farm, he appropriated to the erection of his buildings, which were complete in 1834. In the selection of his fruit he sought for the best varieties, which always gave him preference in the market. So of his stock. In this he avoided the mania of high prices, and has made up in judicious crossing and breed-