

Concluded from page 18.

1847-8. Cain probably dug up the ground with a stone pick, and raised a small crop, as prices ruled low, and the export demand was limited. In the course of time Noah "became a husbandman, planted a vineyard," and experimented a little in the wine business. Abraham was "very rich in cattle," while Lot had "flocks and herds and tents." Jacob gave his brother Esau 80 head of cattle, and had plenty left. When Elisha was sought by Elijah to receive the mantle of the prophet, he was found plowing with twelve yoke of oxen. He was probably dragging a tree-top over the ground to loosen up the surface.

So far as history enlightens us, Chaldea, Egypt, and China were the first countries where wheat and barley were raised to any extent, and their agricultural implements were very rude. On the rich bottom of the Nile, after each annual overflow which left the land covered with muck, it was only necessary to scatter the seed and turn on the hogs to tread it in. The first description of a plow we have, is by Hesiod—a plow consisting of a share, handles, and beam, and used in Greece about 1000 years before Christ. The Greeks are said to have got their knowledge of agriculture from Egypt, and they had what they called very fine horses, cattle and swine. The soil was mainly tilled by a menial race, and the lordly owners looked with contempt upon the laborer and scorned his occupation. They had a few agricultural writers, chief of whom was Xenophon—but a treatise written on parchment, which the Commoners couldn't read, and few of the land-owners would, couldn't be expected to exert much influence in advancing the interests of agriculture. The Greeks cared more for building cities than for cultivating the soil. The Romans, however, seemed to take more pride in farming. To be engaged in cultivating the land was considered a high honor among the nobility, especially after Cincinnatus was called from the plow to pass through fields of blood to triumphal honors. Rome had many agricultural writers; Cato, the orator, had many encomiums bestowed upon him for having written a book on farming. In his book he said: "Our ancestors regarded it as a grand point of husbandry, not to have too much land in one farm, for they considered that more profit came from holding little, and tilling it well." Virgil also said: "The farmer may praise large estates, but let him cultivate a small one." Varro, another agricultural writer of note, says: "Nature has shown two paths which lead to a knowledge of farming, experience and imitation. Farmers hitherto by experiments have established many maxims, and their posterity generally imitates them, but we ought not only to imitate others, but make experiments ourselves; not directed by chance but by reason." Pliny, in recommending the planting of trees to protect the fields from high winds, says: "Men should plant while young, and not build till their fields are planted, and even then, they should take time to consider, and not be in too great haste." To give an idea of the views of men in that age, we quote what Columella says of the points of a good milch cow. "A tall make, long, with a very large belly, very broad head, eyes black and open, horns graceful, smooth and black, ears hairy, jaws straight, dewlap and tail very large, hoofs and legs moderate." The same writer gives the following directions for the treatment of work oxen: "After oxen get through plowing, and come home heated and tired, they must have a little wine poured down their throats, and after being fed a little, led out to drink, and if they will not drink, the boy must whistle to make them." The Roman was limited by law to the possession of only about six acres of land, and he spent two days in plowing three-quarters of an acre. What the average yield was we have no means of knowing, but Pliny says that 400 stalks of wheat, all grown from one seed were sent to the emperor Augustus, and at another time 340 from one seed were sent to the emperor Nero, from Byzantium in Africa, accompanied by the statement that, "the soil, when dry, was so stiff that the strongest oxen could not plow it, but after a rain, I have seen it opened by a share, drawn by a wretched ass on the one side, and an old woman on the other." That soil was like some of the

soil of Oregon, but the team was even poorer than a team in Arkansas since the war. I was down there not long ago, and a friend told me about seeing a disgusted immigrant moving back to Red River from Texas. He had a two wheel cart with raw hide tire. The vehicle contained a frying-pan, a sack of corn meal, a piece of bacon, and an old bed-quilt. He had lost an ox on the way, but had improvised a yoke, with an advantage end, at which our hero was working against the steer, while his bare-foot wife, who carried the babe, pushed at the hind end gate and shouted, "git," when passing a mud hole. My friend said to him: "then you don't like Texas." No Sir-ee," said he; "that kentry may do for a poor man, but it won't near do for me." That fellow, I afterwards learned, managed somehow to get to Oregon, but he left on the next steamer, swearing that "this kentry had been more exaggerated nor Texas." Like all travelers, however, he added something to his stock of knowledge in visiting new countries. While here, he learned the value of blue ointment, and "toted two boxes" back to Arkansas.

Before the fall of the Roman Empire the land limitation law was so amended that a man could own as high as 500 acres. Then agriculture rapidly fell into disrepute, for it was carried on mainly by serfs, and beggarly vassals. When the swarms of northern barbarians swept over Southern Europe, the only place where they were partially checked was in Spain, a country held by the Saracens, former invaders from the East, and coming from the well watered lands of Syria, Persia and Egypt, they inaugurated a system of irrigation called the Southern System of Agriculture, in distinction from the Northern System of Drainage. They built aqueducts, reservoirs, and canals, at an immense cost, and by this means produced such enormous crops, that, according to Gibbon, they increased the annual revenue of their country to \$30,000,000, surpassing the revenues of all Christian monarchs. I have seen just such a system of agriculture carried on in Chili, where the ground is merely stirred two inches deep, with a block of wood sharpened to a point, and drawn by a yoke of oxen with a stick lashed to the horns and attached to a pole which serves for a beam. Enough loose dirt is got to cover the seed, which is then thrown on the ground and bushed in, when the water is let on. With such tillage, the crops year after year are enormous. Much of the soil in the great valley of Santiago is exactly such land as that on which we are standing. While in Santiago, I met a very intelligent Scotch traveler, who didn't seem to think much of the country. "Why?" said he, "they have no soil here, nothing but rocks." I was amazed at his eye sight, but said: Have you visited the market in Santiago? "Oh Yes!" Well, did you ever see in any country such vast quantities and superior quality of grain and vegetables? "No, I believe I never did." Well, said I, if rocks will produce that, rocks is good enough soil for me. He laughed and said: "there is something in that which I had not thought of. Now the secret of all this was water, the best and cheapest manure in the world, and worth more than all your deep plowing. When the streams that go dashing down your mountain sides are utilized as they were in Spain, and as they are in Chili, the value of your land will be increased from two to five fold."

In Great Britain, after the Saxons invaded the country and wrested it from the hands of the Romans at the end of 400 years of occupation, during which, agriculture was in a wretched condition, it was a long time before the Saxons attempted to raise anything but a little wheat, barley and oats. The results of labor were too uncertain and insecure, to offer encouragement to labor, where the laws gave no adequate security to life or property. The people subsisted mainly by hunting and by keeping swine, which fattened every year on the mast of the beach and oak. Besides, they kept a great many cattle, about one-fifth of which perished every winter for want of food and shelter, while frequently a miserable murrain swept off a much larger number. No garden crops of edible vegetables were cultivated, and neither corn, nor potatoes, nor cabbages, nor turnips, were known in England till after the beginning of the sixteenth century.

Even as late as the reign of Henry the VIII, in the beginning of the seventeenth century, Queen Catherine had to send to Flanders, or Holland, for salad to supply her table. Now you would like to know how these people lived. We find in an old book called the "Treasure of Ancient and Modern Times," published in 1618, the following description of one of their feasts:

"The meats served into the Table was always in great chargers, filled with pease and Bacon, Gammons of Bacon, huge neats, tongue salted, great pieces Beafe, boyled Poultry with Potage about them, boyled Mutton, veale and other grosse food, almost in every ordinary family; and they gorged in these victuals, so long as they could cram any more into their bellies. Afterwards they brought on other Meates, answerable to the former, but roasted and larded oftentimes with unsavory lard, but it would go for Pigs and Hares. After this Second Service had stood awhile on the Table well neere to 1.0 effect, then came in more dainty Meate of Fowles, as Mallard, Wild Ducks, Ring Doves, Young Pigeons, Partridges, Quails, Plovers, Woodcocks, Turtle, and others of like kinde, which are carried away like the Second Service, almost never toucht for they (good men) had filled their stomachs with the first course of meates, feeding hungrily on them, and drinking Sower wines, such as Summer Marreth, so they left the best and daintiest meates indeed for their varlets and base servants to feede on." That reminds me of living in West Tennessee nearly 40 years ago—meat, meat, nearly all meat. In place of vegetables we had sweet cake that I could take in my hand and squeeze enough lard out of it to grease a pair of boots. Our health, however, was carefully looked after in the Spring, when, for six weeks we were put upon hogs' jowls, turnip greens, and Sassafras tea—the Sassafras to work the poison of the pork out of the blood.

The first writer on Agriculture in England was Sir Anthony Fitzherbert, who published a "Boke of Husbandrie," in 1534. He styled himself "a farmer of 40 years standing." What he learned about farming in 40 years was, "A husbände cannot thryve by his corn without cattelle, nor by his cattelle without corn, and shepe, in myne opinion, is the most profitabest cattelle that any man can have." Then came Thomas Tusser, who enlightened the Saxons on agriculture in "Five Hundred Points of Good Husbandry." A book written in doggerel verse, and which was sought after, and read until it was so worn out, that in printing a second edition, the publisher found it very difficult to find a copy whole enough to print from. Now, this great light on agriculture was so much like many who write a great deal now-a-days, that it may be of interest to take his weight as given by Fuller. He is described as "successfully a musician, schoolmaster, serving man, husbandman, grazier, poet, more skilled in all than thriving in any vocation. He traded at large in oxen, sheep, dairies, and grain of all kinds to no profit. Whether he bought or sold, he lost, and when a renter he impoverished himself, and never enriched his landlord." No wonder that farmers who followed him are described as in a most deplorable condition, and nearly half of the time on the point of starvation. In Scotland a like system of things prevailed, and even as late as 1768, Lord Kames said—"Our draught horses are miserable creatures, without strength or mettle, our oxen scarcely able to support their own weight, and 2 going in a plough, led on by 2 horses, the ridges in the fields high and broad, in fact enormous masses of accumulated earth that could not admit of cross plowing or cultivation, shallow plowing universal, ribbing, by which half of the land was left untilld, a general practice over the greater part of Scotland, a continual struggle between corn and weeds for superiority, the roller almost unknown, no harrowing before sowing, and the seed sown into rough uneven ground, where half of it was buried. No branch of husbandry less understood than manure, potatoes generally planted in lazy beds, swine little attended to, and very few farms in Scotland proportionate to the skill and ability of the tenant." During the eleventh century, according to Fleta, the highest authority we have, the average yield of wheat per acre was only six bushels, and 300 years later, 57 acres on a farm at Haw-

sted yielded only 366 bushels, or less than six bushels and a half to the acre, and on an average of several years it's yield was about the same.

During the long dark period that we have glanced at, the art of soil culture was carried to as high a point of perfection as could have been expected, considering the land was generally tilled by vassals and slaves who had no interest in it, ignorant of letters, and liable at any moment to be forced from the field into invading or resisting armies, and when even the scholars of the age knew almost nothing of organic chemistry, and couldn't tell how and why manures promoted the growth of vegetation.

For ages the winds swept over the plains, and the waters sought the ocean through the rivers without turning a mill. Even as late as 1830, Professor Leibig astonished the world, and opened the way for a new system of agriculture when he announced, that to manure an acre of land with 40 pounds of bone dust, prepared to be intimately mixed with the soil, by pouring over them half their weight of sulphuric acid, diluted with three or four pints of water, would be sufficient to supply three or four crops of wheat, clover, potatoes, turnips, etc., with the necessary phosphates.

The discovery of printing, the right of owning land in fee simple by every farmer, the inventions of machinery, the aids of organic chemistry, the general diffusion of knowledge, the introduction of agricultural fairs, and the final recognition of woman as an equal and helpmate, in developing and perfecting all the appliances that tend to the progress, honor and glory of the race, have, within the last hundred years, made the pages of our history, being transmitted to posterity, more luminous than would all the concentrated light of a thousand years before. You go to Copp's Hill Cemetery in Boston, where Cotton and Increase Mather are buried, and see the rude tombstones carved with the same horrible figure everywhere, meant to represent an angel, a death's head, a witch, or a devil, nobody knows which; and letters so roughly chiselled, that what you see of our fathers' status in art, throws a pall of darkness over their day, as an age of intolerance, bigotry, and cruelty, as it was. Then visit Mount Auburn Cemetery, the work of their children. Witness the beautiful meandering walks, lined with flowers and shade trees everywhere, the cooling fountains of sparkling water, the polished marble monuments, with the most exquisite chiselling, telling who sleeps there, and surmounted with smiling cherubs, cut from the finest marble; with finger pointed heavenwards, to remind you that the emancipated spirit of the dust beneath, has gone upwards, and awaits your coming in the New Jerusalem. There, you see in the works of modern art, written as with letters of gold, the moral status of New England as she is to-day, among her rocks and barren hills, the freest, most intelligent, enterprising and liberal people on earth.

The discovery of printing, steam and the telegraph, advanced the race more in a hundred years than it had done a thousand years before. The discoveries that are yet to be made, by genius, that is still agonizing to enter the inner vestibule of the Arcana of Nature, will no doubt eclipse all that have been made. If so, it is beyond our power to estimate the character of posterity a hundred years hence. At the next Centennial Fair our children's children will be curious to know what manner of people assembled here in 1876, and what we had on exhibition. They will know, for the records will be handed down to them, and their President and Orator will probably read over the opening address of President Watson, and perhaps mine, to see how people thought and talked in those days.

Through the dim vista of an intervening hundred years, we can get but little better outline of what they will then be, than we get of what people were a thousand years ago. But we do know that the line of march which a swarming humanity has taken up, leads onwards, and upwards, and we believe it will still go on till "Peace, and good will to man," will be written over every gate-way—Hallelujah! be waited on every breeze, and Glory! sung in every dark valley and corner of the world.

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