

Rural Economy.

GRAIN FARMING IN EASTERN PENNSYLVANIA.

Travelling toward Easton, through Morris and Warren Counties, New Jersey, one of the first things that strikes the Eastern farmer, is the greatly increased size of the fields. The one and two acre lots so common in his observation, have expanded to ten and twenty acres, and thirty and forty acres are not uncommon. Farming is manifestly pursued upon a much larger scale. There is a clean sweep for the sulky cultivators and harrows among the corn, and for the reapers and mowers among the grain and grass. In some cases the fields have always been upon this generous scale; in others, the stone walls and hedges have been removed, in order to enlarge them. We found one farmer who had just cleaned out the old fences, and made several smaller fields into one of sixty acres. Very little time will be lost in turning round at the ends of the rows, and little corn trampled in cultivation. Another noticeable feature of the farming here is the larger proportion of plowed land. From a fourth to one-half of the land is kept in grain. On one farm we saw eighty acres in corn, twenty-five in wheat, and as much more in oats. On another three-hundred-acre farm, we found eighty in wheat, fifty in corn, and fifty in oats. Grain fields of from two to three acres are common. Probably not less than four parts of all the cleared lands in the Valley of the Susquehanna in these three grains, the present season.

THE VALLEY OF THE LEHIGH, which we enter at Easton, is one of the richest in the State. The soil is fertile, and is well cultivated at the lower part, with the usual grain crop. Rye stands side by side with the winter-wheat, and is nearly as extensively cultivated. The soil is full of limestone and iron ore, and the coal is near at hand. The leading business in the villages below Mauch Chunk is the smelting of iron ore, and the manufacturing of the metal. The foundries and rolling mills support a large population, and one is hardly ever out of sight of the smoke-stacks of these institutions. We were surprised to see the extent and thrift of these iron cities and villages. By giving variety to the industry of the region, they are a great advantage to its agriculture. Almost everything that can be raised upon the adjacent farms finds a ready market at good prices in these villages. At Mauch Chunk, the coal mines first begin to disgorge their contents, and a new industry absorbs the whole attention. The mines are several miles back from the river, and the coal is brought by rail to the top of the bluff at a very moderate grade, when it is either discharged into a shoot that conducts it into canal boats, or sent down in cars by a wire rope attached to a windlass, the loaded cars drawing up the empty ones. All the Lehigh coal mines in this basin send their freights to market down this valley, either by rail or canal. Above the coal district there is an extensive lumber region, and vast quantities of peeled hemlock logs are seen in the ponds, made by damming the river. There are vast tracts of forest above White Haven, with very few clearings, poor, rough land, that will probably pay better to grow timber for generations to come than for any other purpose. Two rival railroads have found their way through this wild region to the

WYOMING VALLEY, for the traffic of which both are struggling. Much has been said and sung of this charming Valley, but, with all this in mind, we were not prepared for the vision of beauty that burst upon us as we emerged from the wilderness on the crest of the mountain, some twelve-hundred feet above. One gets glimpses of it through the rifts in the forest all the way down, until the depot at Wilkesbarre, on the banks of the Susquehanna, is reached. Coal of an excellent quality underlies the whole region for a distance of forty-four miles long, by about three in width, and by its superior value has spoiled one of the finest farming districts in the State. Unimproved coal lands are worth from \$300 to \$500 an acre for mining purposes, and have been bought up extensively by companies, who care very little for the surface of the soil. It is estimated that not one-fourth of the land is tilled by people who own it. It is very generally leased, and the tenant looks for present profit without much regard to the future of the soil. In some parts of the Valley, where the land has been bought up on speculation, the farmhouses are abandoned and the fences are broken down. Mining also works to the disadvantage of the farmer in enhancing the price of labor. During the war, skillful miners were making from \$8 to \$10 a day, and even now they make \$3, working about nine hours. Those who work with them to break up the coal, and load it into the cars, make about \$1.75 per day, which is too high for farming. Of course, it is somewhat difficult to get labor, and agriculture has to give place to mining. But notwithstanding these drawbacks, there is some good husbandry in the Valley. The bottom lands of the river are very productive, and though overflowed in the freshets almost every year, are frequently sown with winter grain. There is a County Agricultural Society organized in the Valley, which has its exhibition grounds, and holds an annual fair at Wyoming.

We found the practice of drilling wheat almost universal in the grain-districts of Pennsylvania and New Jersey, and the only exceptions are among the small farmers who do not feel that they can afford a drill. At the West, the practice of drilling is coming rapidly into favor. Those who have their farms sufficiently cleared of stumps, and can own a drill, generally use the instrument. There are many patented drills, which cost from \$90 upwards. Some, drawn by two horses, sow eight inches apart, and make

eight drills at a time. We found at Terre Haute, Ind., a sulky-cultivator and drill combined, costing \$55. In that neighborhood the sale of drills is increasing very fast. The advantages of the drill are that it saves seed, which in the case of wheat is a very important item; that it gives the growing grain more air and sunlight, and guards against winter killing. It plants the seed at a very uniform depth in the bottom of a narrow trench, the sides of which crumble under the action of the frost, and cover the roots of the plant, if they are thrown out. The conviction is universally in favor of the practice, and a good drill will prove a good investment.

SPIRITUELLE VEGETATION.

Every one is familiar with the common green mould, or *Penicillium glaucum*, of botanists. This fungus is extremely abundant everywhere, and seems to have been no less general in the ancient world, for we find traces of it pretty frequently, mixed with fragments of lichens and mosses, in amber. It grows on all kinds of decaying substances, and is very protean in its appearance, assuming different forms according to the nature of the body or situation which it affects. To the naked eye it is a mere greenish, downy crust, spreading over a decaying surface; but under the microscope it presents a singularly lovely spectacle. The little patch of dusty cobweb is transformed into a fairy forest of the most exquisite shapes. Hundreds of delicate transparent stalks rise up from creeping interlacing roots of snowy purity, crowned with bundles of slender hairs, each like a miniature painter's brush. Interspersed among these hairs, which, under a higher power of the microscope, are seen to be somewhat intricately branched, occur greenish, dust-like particles, which are the spores, or seed-cases, containing in their interior, the excessively minute and impalpable spores or germs, by which the species is perpetuated. A more entrancing sight cannot be seen, amid the infinite beauty and wonderfulness of this world, than these Lilliputian grooves of fungoid vegetation spreading over a decaying crust of bread, or a damp, mouldy, old shoe, or the surface of a neglected pot of preserves. Often when coming home, wearied and surfeited by the inexhaustible enjoyments of a summer ramble, has my sense of God's power and love been revived and quickened by the microscopic examination of a fragment of rubbish, thrown away into some dark corner; and I have felt constrained to acknowledge that the glories of the outer world of sense and sight, illumined by the summer sun, sank into insignificance, when compared with the spirittuelle vegetation which bloomed unseen beyond the reach of sunshine and dew, and covered with its mantle of loveliness the unsightly ravages of death and decay.—Hugh Macmillan.

BLEEDING BREAD.

An article in the April number of the *Edinburg Review*, on the subject of "Spontaneous Generation," contains an explanation of an apparently miraculous occurrence which has astonished and appalled beholders for many ages. The discovery has recently been made by Dr. Eberman, of Berlin: "The singular phenomenon of 'bleeding bread' has been occasionally noticed from the earliest times; thus Alexander the Great, according to the account given by Quintus Curtius, was appalled by the appearance of blood flowing from inside his soldiers' bread during the siege of Tyre in 332 B. C. His seer Aristander foresaw in the flowing of blood from the inside of bread a favorable omen for the Macedonians, and the soldiers, thus inspired, captured Tyre. From the year 1004 the phenomenon of the bleeding Host and bread, as well as the 'bewitched bloody milk,' was observed several times each century; thus it was noticed in 1264, under Urban IV., at Bolsena, not far from Civita Vecchia, and Raphael has taken this for the subject of his picture called the 'Miraculo di Bolsena.' In 1383, when Heinrich von Bilow destroyed the village and church of Wilsnach, drops of blood were found eight days afterward on the Host placed on the altar. In 1510 thirty-eight Jews were burned to ashes because they had tortured the consecrated Host until it bled."

"In the year 1819 the same phenomenon was seen at Legnano, near Padua, and in consequence of the great excitement produced in the minds of the inhabitants, a Government Commission was appointed to investigate the cause of the appearance of blood-stains on food, which about the end of August was to be seen in more than 300 houses, and the priests were forbidden to exorcise the supposed witchcraft. The same appearance was observed on the Moselle in 1824, and in 1843 the celebrated microscopist Ehrenburg had an opportunity of examining this singular phenomenon in Berlin. The conclusion which he arrived at, from the careful microscopic investigation of the red stains on bread, cheese and potatoes, was that it is caused by small moulds or vibrios, which have a red color, and are so minute that from 46,656,000,000,000 to 884,736,000,000,000 distinct beings occupy the space of one cubic inch. In August, 1866, a piece of roast veal was handed to Dr. Erdman, upon which a quantity of these blood stains was found, giving the meat the appearance of having had a mixture of cherry and raspberry sauce poured over it, dried, and then partially washed off with water. In this red portion large numbers of vibrios were seen in rapid motion, 'dancing like a swarm of gnats in the sunshine.' Dr. Erdman next tried to inoculate these red stains on to other articles of food, and in this he was perfectly successful. After thirty-six hours the bread upon which a few particles of the red matter were placed became stained, almost throughout, of a bright crimson color. A microscopic examination of this bread showed that the starch granules of the bread remained uncolored,

and that the formation of the red substance only occurred on the gluten or nitrogenous portion of the flour. He also showed that the disease could be communicated to many other albuminous substances—such as the white of egg, serum of blood, potatoes, etc.—indeed, that the contagion could be communicated without direct inoculation, as the particles floated about in the air, and all the moist bread and potatoes left exposed in the laboratory where he was carrying on his experiments became imbued with the color.

"In his further investigation of the nature of the phenomenon, Dr. Erdmann arrived at two most interesting conclusions: (1) the color is not due to the vibrios themselves, which are perfectly colorless, but it is produced by them from the albuminous matter contained in the food upon which the stains appear; (2) this coloring matter can be separated from the animals which produce it, and appears to be identical in its properties with the well-known artificial color known as 'magenta,' now so much in vogue. Here, then, we have a real manufactory of equal-tar colors from albumen by the help of small infusoria! Who knows but that as we now have plantations of eacti on which the small cochineal insect feeds which yields us carmine; so we may in time grow our magenta by the aid of these most minute vibrios!"

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