

offensive. Mr. Martin told me that he had one day discovered some railway laborers sitting beside the ditch, making use of the effluent to wash down their luncheon. They were surprised when warned of its character, and said it was the sweetest water they had found in the neighborhood. Mr. Martin gave me some valuable information as to the vegetation best and most profitable to raise. We have been accustomed to consider Italian ryegrass as very suitable. Mr. Martin raised this in his first year and could neither sell nor give it away. It was so coarse and rank that stock raisers would not accept it as a gift. The vegetables which they found they can raise most profitably are celery, onions, and cabbage. Many other vegetables can also be raised. Potatoes cannot be grown at all, except as a decided failure. In some years, the farm (besides being a profitable sanitary investment which it always is) has yielded as much as eight per cent. or over, but in other years—years of drought or of early frost it has yielded no direct profit; the outlay has never exceeded the returns. The city of Pullman is admirably clean and well kept. I would like to refer to one of many things that I would note if time permitted, and that one thing is the excellent ventilation and absence of dust in the shops; over each dust-producing machine in the process is a funnel; these funnels are connected with exhaust air-shafts, the exhaustion being produced by an extract fan situated over the boiler room of the great engine house. Into this room then the saw-dust is drawn, and it passes down to the boiler where it is burned. From an article by Mr. Doty I extract a few descriptive remarks:—

The city of Pullman is built scientifically in every part, and is exceptional in this respect. Here both the drainage and sewerage preceded the population, and the soil is now as free from organic contamination as when it formed a portion of the open prairie. Every building, too, has been constructed from approved plans and under the supervision of competent builders and engineers. The city is situated ten miles south of the city limits of Chicago and upon the west shore of Lake Calumet. The lake is about three and a half miles long by one and a half in width and drains through the Calumet River into Lake Michigan, which is a little more than three miles distant. The buildings already erected are upon ground

which is from eight to fifteen feet above the level of the lake. The soil is a drift deposit of tough blue clay ninety feet in depth resting upon limestone rock. The land gradually rises to the north and west to an elevation of twenty-five feet above Lake Calumet, this lake usually being from three to five inches higher than Lake Michigan. There is no land of a marshy character in the neighborhood, the bottom of Lake Calumet even being of hard blue clay from which the best cream coloured bricks are made. It was deemed unwise to permit any sewage to flow into the lake, so the plan of drainage adopted is what is known as the *separate* one, and comprises two systems of pipes. The fall is sufficient to secure good cellars or basements for all the dwellings of the city, the drain pipes leading from cellars to the laterals being at least eighteen inches below the cellar bottoms. The parks and playgrounds are all thoroughly drained. The lands surrounding the town are well drained by ditches. The population of Pullman, October, 1886, was 9,000, and land enough is already piped for using the sewage of 15,000 people. The pumps at the pumping station can handle 5,000,000 gallons a day if necessary, and the iron main to the farm would carry the sewage made by a population of 50,000. These pumps are now required to handle a million and a quarter of gallons from the town and all the shops and public buildings. All the waste products of Pullman are carefully utilized, being largely transformed by vital chemistry into luxuriant vegetable forms. Every provision is made for flushing and cleaning the sewers and for keeping them in perfect order. There is no town in the world where drainage and sewerage are so perfect as they are here, and the phenomenal health of the population is one of the results. Although supplied with the purest water from Lake Michigan, they do not look upon it as a benefit equal to that of the drainage and sewerage. Cases of zymotic diseases here are rare, and the death-rate of the city was only 8 for every 1,000 of its people during 1886. The average death-rate for most American cities is three times that of Pullman, and the death-rate for the whole world is placed at 32. Ample provision has been made for extending this system of sewerage and drainage to meet the wants of 100,000 people. Engineers, members of boards of health works, committees of common councils and legislative bodies from all