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THE PRESENT STATUS OF THE BICYCLE.

The development of the use of the bicycle, which has been often spoken of in these columns, has attained now a wonderful extension. Wherever one travels in the country, whether near or far from the center of population, the omnipresent bicycle is found. On country roads the woman school teacher is met riding home from the district school; in manufacturing places the artisan is seen, perhaps dressed in his overalls and carrying his dinner can, going on his wheel on his way to and from his work. In road houses and in some stores special provision is made for the care of bicycles. Men go to their business on them, and it is at last proved that a new mode of everyday, practical locomotion has been developed.

All the above is trite. Coincidentally with this immense development of what was once a sport, but is now no more a sport than is any other means of locomotion, has appeared a considerable amount of opposition to the wheel on the part of those who do not ride. A disposition exists to enforce ordinances more rigidly in the case of riders of wheels than is the custom against others, while the old tendency to legislate directly against their use is still shown in places. The wheel, with its pneumatic tire, stealing along silently at a relatively high speed, seems to possess the power of irritating the pedestrian from the apparent danger of collision. It seems not to occur to him that while legislation is being invoked to force trolley cars to be provided with fenders, the very element which makes the bicycles noiseless, which is the pneumatic tire, provides it with a reasonably effective fender. The pneumatic tire is certainly a great safeguard, if, by accident, a pedestrian should be struck by a wheel. Meanwhile, in spite of opposition, the use of the bicycle continues to increase, and one of the best safeguards against iniquitous legislation is certain to be afforded by the probability that the majority of legislators in the near future will be riders themselves.

To transform the everyday progress of a man through the streets from a speed of three or four miles an hour to a speed of ten, to give him as environment, instead of a crowd of other pedestrians, a quantity of vehicles of all descriptions, is a most radical change. The country road invaded by the trolley car running at twenty miles an hour is a parallel illustration of the change of conditions. In the matter of all governmental ordinances the existing conditions have to be considered. The regulations formulated in past days, concerning traffic on roads, in a general way recognize the wagon drawn by horses, the horseback rider, and the foot traveler as the elements to be provided for. As the bicycle came into prominence, the old view of it as an instrument of sport, pure and simple, something for pleasure, not for use, was hard to abandon, and many relics of this opinion still exist.

It is not saying too much to assert that the time has now come for a change. On the roads and streets it is no longer the two thousand pound truck, the lighter carriage and the slow-moving pedestrian that are to be considered; the bicyclist is a new element, which has created a new condition of things which must be recognized and provided for, and is destined sooner or later to have its interest conserved. The day for inimical legislation passed long ago; the time has come for special consideration. The streets of our large cities, as a rule, are ill adapted in the business districts especially for the bicycle. In cities where the business streets are rideable, the bicycle has come into the most extensive use for business men and tradesmen of all classes. But the stone-paved street, adapted to heavy traffic, is but ill adapted to the bicycle, and what seems to be wanted is a compromise pavement, which will suit all classes of traffic. Taking the city of New York, it would not seem impossible to provide one or more through bicycle routes from the upper part of the island to the Battery. A street with proper pavement on it, adapted especially for bicyclists, would not be too much to be granted to the ever-increasing army of riders, but it would be far better to devise some form of pavement which would meet all classes of traffic and which would enable the bicyclists to ride about the business portion of the city as comfortably as they now do in the parks and boulevards. An immense field for the civil engineer is opened in the providing of such streets in business cities. Asphalt, which gives a smooth though dead surface, is being introduced very extensively in the residential portions of the metropolis. It seems questionable if it would answer for the districts devoted to heavy traffic. Vitriified brick has been adopted in many places with satisfaction to bicyclists and truckmen. A small experimental piece has been laid in this city, and it may be laid upon the Ocean Parkway, in Brooklyn. To provide a bicycle path, the asphalt of the space between the tracks of cable car lines or of trolley car lines has been suggested, and this has been done in this city on one street, though not to accommodate cyclists. As the case now stands, there is a new form of traffic to be provided for, one whose magnitude is daily increasing, and which in the near future will excite attention greater than it is now receiving. The

friction between the bicyclists and the pedestrian is bound to decrease in time; it seems at present to be merely due to the difficulty mankind has in recognizing the existence of a new state of things in daily life.

Incidentally the lowering of the price of bicycles and the possibility of procuring cheap ones second hand has imparted to the bicycle a most important element in making it the vehicle of the workman as well as of the rich. A few months' car fare will pay for a wheel, so that it has definitely ceased to be a luxury, and the workman who never could have dreamed of owning a horse, can possess without extravagance a bicycle, which will surpass the ordinary horse in speed.

POSSIBILITIES OF BEET SUGAR INDUSTRIES.

We derive the following from the Sugar Beet:

The total area devoted to beets for the seven beet sugar factories in the United States (this includes the small output of Virginia) was, in 1893-94, 19,647 acres, from which were obtained 195,895 tons beets and 45,191,296 pounds sugar, corresponding to a yield of 2,300 pounds sugar per acre, and an average of 230.7 pounds per ton of beets worked on an average extraction of 11.5 per cent. The average yield of beets per acre was 9.9 tons. Accepting these figures as a basis of calculation for the requirements of the Union, the consumption of sugar during 1894 was 2,024,648 tons, or 4,535,211,520 pounds. To obtain this sugar there would be needed at least 2,000,000 acres of land if the yield be 10 tons to the acre, and beets sell for \$4 per ton. The money for these roots represents the enormous sum of \$80,000,000 that would be put into circulation among our farming population.

If we admit that farmers receive gratuitously 50 per cent in weight of beets furnished by the residuum pulp as it leaves the process, this would be sufficient to feed not less than 2,000,000 head of cattle during the three winter months when fodders are the most expensive. If we admit two pounds increase per head and diem, then would result 400,000,000 pounds meat obtained from a product that is now receiving only a limited attention.

If the entire residuum should find utilization in the United States when the industry exists fully, there would be not less than 550,000,000 pounds meat obtained at a minimum cost.

To make this matter thoroughly clear from a farmer's standpoint, we can suppose that 10 acres of land yield 100 tons of beets, which are sold at the factory for \$400. In return he gets for nothing 50 tons, or 112,000 pounds, residuum pulp. We may admit that the ration consists of about 100 pounds pulp (combined with other products) per diem for 100 days; the consumption per head would be 10,000 pounds pulp, or sufficient for 11 beeves. If the rate of increase is 2 pounds per head per diem, during the time of feeding, the total increase is 2,200 pounds. If the farmer clears 4 cents per pound on his meat he has 88 additional dollars that his land yields him. The resulting manure from this feeding is an item of considerable importance, not to be overlooked.

According to Willett & Gray, the entire consumption of sugar in the United States during 1894 was 2,024,648 tons, i. e., 265,500 tons domestic cane sugar, 20,000 tons domestic beet sugar, 300 tons sorghum sugar, 5,000 tons maple sugar, 15,000 tons domestic manufactured molasses sugar, or 305,800 tons of home-made product, to which must be added 1,554,528 tons of foreign cane sugar, 159,796 tons foreign beet sugar, and 14,524 tons foreign refined sugar, or a total for foreign product of 1,718,848 tons.

Experiments in feeding inferior and superior beets to sheep have shown that there are many advantages to be gained by using roots of high saccharine percentage.

In the manufacture of alcohol, either from beets or beet molasses, there is always a residuum which may be used for the manufacture of potassa, or as a fertilizer. The product left over is known as vinasse, and contains about 12.8 per cent potassa, 3.7 nitrogen, 0.1 per cent phosphoric acid, and 0.1 per cent lime. For beet soils this may be used in quantities corresponding to 7 tons to the acre.

From the official data respecting the sugar campaign for 1893-94 in Germany, we glean some interesting figures; 405 factories were working, and there were 966,200 acres planted in beets. The total weight of beets worked at factories was 10,644,300 tons, giving an average per factory of about 26,000 tons. The average sugar campaign was only 78 days. The total sugar production was 1,319,000 tons, corresponding to an extraction of 12.36 per cent. If we include the sugar extracted from molasses, the extraction becomes nearly 13 per cent. The exportation of home-made sugars was 728,000 tons. The consumption of sugar remains about the same from year to year, and is nearly 600,000 tons.

The returns from an acre of beets in Germany are \$40, while from wheat and other cereals only \$20.

The total area devoted to beets in the empire during 1893-94 was 966,000 acres. The average yield of beets to the acre was nearly 11 tons. To produce 100 pounds