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The Editor is always glad to receive for examination illustrated articles on subjects of timely interest. If the photographs are *sharp*, the articles *short*, and the facts *authentic*, the contributions will receive special attention. Accepted articles will be paid for at regular space rates.

AUTOMOBILE ROAD RACING.

Not for a long time have we seen such an ill-timed display of prejudice, as was shown by some of the daily press against the international automobile race, recently held on Long Island. The arguments advanced were illogical; for, if pressed home and broadly applied, they would make a clean sweep of every form of sport that involves the element of danger, or calls for the supremest development of mental and bodily powers.

A careful sifting out of the voluminous correspondence and lengthy editorial criticisms of the race shows that it was condemned mainly on two counts: first, that it was dangerous to the competitors, and second, that the machines they drove were over-developed mechanisms, fit only for carrying the drivers through the race at break-neck speed, and having no subsequent usefulness whatever.

It takes only a moment's consideration to see that the same objections apply to the racehorse and the racing yacht, to say nothing of various forms of sport such as football, polo, and some that are less prominent in the public eye. Set a ban upon every competition that entails danger to life or limb, and we would be at once reduced to croquet, shuttlecock and battledore, and a few other thrilling diversions that were the delight of our forefathers. Risk is inseparable from any high form of sport; and we have to recognize the fact that human nature is so constituted that this very element of risk does in itself form one of the strongest attractions of the sports that are popular in the present day. It was so in the days when the queen of the tournament watched the contesting knights meet in the terrific shock of encounter, and it is so to-day when the gentlest women of the country are to be found forming a large percentage of the interested spectators of an automobile contest. The editorial writers who spilled so much ink in deploring the reckless folly of this race on Long Island, no doubt had their forerunners in the days of Richard Cœur-de-Lion, when there was surely much wagging of heads and shaking of fingers, and many "I-told-you-so's" filled the air; and they will doubtless have their worthy successors fifty years from to-day, when, on the eve of some international airship contest or other "folly," the correspondent and the editor will join in deprecating foolhardiness and predicting unlimited disaster.

The second indictment against these races, on the ground that they serve no useful purpose whatever, is equally futile. And, unlike the first charge, it has no basis whatever in fact. The donor of the cup gave it for the express purpose of stimulating the automobile industry, by enabling our mechanics to learn those lessons regarding the faulty features in the design and the weak elements in the construction of their machines, which can only be disclosed during the terrific strain to which an automobile is put in covering the several hundred miles of the course at its topmost speed. It is begging the question to claim that all this information may be gathered during an ordinary run at touring speed over country roads; for it is not once in a hundred trips that a touring machine is put to the severe strains to which a racer is subjected over and over again during one of these contests. Take the case of the two machines in the recent race that use the bevel drive—one a 35-horse-power Royal American machine, the other a 90-horse-power French Renault. Each of these broke its main drive shaft; moreover, in each case the smash occurred very early in the race—a clear indication that whatever are the merits of this form of drive, particular care must be taken in proportioning the shaft to its work. Take the case of another machine that broke the steering knuckle lever a day or two before the race, and in the race itself broke this same part. It is conceivable that the firm who manufactured this machine might have continued to use the same pattern on their standard makes, had not its inherent weakness been thus clearly demonstrated in this contest. Furthermore, the fact was established in the case of practically every machine in the race that the weakest point of the automobile, the one in which trouble will come first, when the machine is hard pressed, is the tires. Doubtless this was known before; but it is certain that the experience gathered in this race will result in special attention and renewed effort upon the part of the tire makers.

Unquestionably, in respect of its usefulness, automobile road racing stands and falls with the thoroughbred horse and the racing yacht. It goes without saying that the sport of horse racing, with its development of the racehorse, has had a widespread and lasting effect in improving the breed of horses in general. So also the development of a "Reliance" or a "Shamrock" through the past half a century of international cup racing has been a most powerful factor in the improvement of sails, both in texture and cut; has stimulated, on the part of shipbuilders, the search for light but strong materials of construction; and has led to the adoption of many forms and methods of construction at once lighter and stronger than those formerly common to the art.

SCIENTIFIC DISPOSITION OF SEWAGE.

BY CHARLES F. HOLDER.

"The English walnut crop of 1903 of the Pasadena, California, Sewer Farm has been purchased by P. R. Wilding, a commission merchant of Los Angeles, for $7,419. This is the third consecutive year that Mr. Wilding has bid for and received the crop."

The above item appeared in the Los Angeles papers in November, 1903, and is of interest, as beneath it we may read the story of a very successful disposition of sewage from a city of 15,000 or 20,000 inhabitants. Indeed, Pasadena claims to have solved the question of the scientific disposition of its sewage, and can demonstrate to any interested parties that the work is accomplished not only successfully, but is a good business proposition to the city.

The city of Pasadena lies on the gentle slope of the Sierra Madre, at the head of the San Gabriel Valley, and covers practically twenty-five square miles, the city, including Altadena, reaching to the mountains on the north and from the banks of the Arroyo Seco to Lamanda Park to the east. For many years, and when the city was in its incipiency, the sewage was received in cesspools; but some years ago a system of sewage became necessary, and plans were at once begun, resulting in the present arrangement, by which the central portion of the city is well sewered. The plant, consisting of about fifty miles of pipe, has 650 manholes, 140 flush tanks, and all the modern features which go to make up a perfect system, all of which cost the city in the neighborhood of $313,457. The establishment of a plant was comparatively a simple matter, but to convey the sewage to the ocean—thirty or more miles distant—was a problem which seemed insurmountable. Many people would not give the right of way; others attempted to demonstrate that the pipe would break, and contagion would fill the air along the line. All the neighboring towns and dependencies of Pasadena rose in open revolt, and for a while the singular situation was seen of a city with a sewer system assured yet with no method of disposition. This was solved finally by the purchase of a tract of three hundred acres of land lying four and three-quarter miles to the southeast of Pasadena, midway between the town of Alhambra and the Mission Hills—a region which, it was well known, but required water to produce crops of many kinds. This land was acquired by the city for $37,500, and named the Sewer Farm, where it was proposed to deposit the entire sewage of Pasadena, and, briefly, turn it into money to recoup the city for its general sewage expense.

The sewer farm is, roughly speaking, about five miles and a half from Pasadena, and the outfall pipe is about that length, 22 inches in diameter and of vitrified clay. It was placed five feet beneath the surface, having a fall of 31 2-3 feet per mile. There were several features here not found in the East, where rains flush the sewers continually. There was no rain from May to November, hence rain or a natural flow of water could not be depended upon; yet no serious difficulty has been experienced, the natural flow of the waste water being all-sufficient for the purpose. The farm is in the hands of a practical farmer, who runs it on scientific principles, and for nearly a decade it has been a yearly value-increasing asset of the city.

The farm is divided by a road, so that one-half lies on each side, and is conducted as a continual producing proposition. In a word, it is worked over and over again, producing just as many crops a year as it can be forced to, the continuous supply of sewage enriching the soil indefinitely. That timber is raised is evident by the fine forest hedge and windbreak of eucalyptus trees—among the most rapid growers known when there is an abundant supply of water. They are self-producing, that is, when the tree is cut it at once throws up new stalks, and in a short time a new tree is ready for the ax, the wood being valuable for many purposes. The wood is used for fuel, the leaves as an ingredient for medicine and oil. At present the trees are nearly one hundred feet high, and as they have been planted ten feet apart, in ten rows, they form a magnificent line two miles and a half in length—a landmark for a long distance.

The best product of the farm is the English walnut grove, it being found that these trees lend themselves especially to this treatment, and ninety acres have been planted with them, the trees in size and condition being among the finest to be seen in Southern California. This plot alone produces between $7,000 and $8,000 every year, and that it is almost net, the simplicity of cultivation shows. Of this ninety acres in walnuts, sixty is in old trees, thirty in young ones; and the rapid increase in value and number is seen in the fact that the crop of fruit last year, or the year ending January, 1903, was $4,738, the crop weighing 45,131 pounds. This crop is ripe in October, at about the same time as the chestnut of the East, and a large number of pickers, among whom are Indians, Mexicans, and half-breeds, are employed. The nuts are knocked or shaken from the trees by men armed with poles who are followed by pickers with gunny sacks, who carry them to the sheds, where they go through several operations before being ready for the market. A large acreage of the farm, at least twenty, is planted to pumpkins, which grow to a remarkable size and make an extraordinary display when ripe. They are used to feed stock, principally hogs, of which there is a herd at present of two hundred. One hundred and thirty acres are planted to barley, which is the principal hay crop of California; and so complete is the system that two perfect crops are raised, the same being true of corn; and doubtless as the farm is perfected, experiments will demonstrate that many crops can be duplicated.

The secret of the success of the Pasadena farm method lies in the application of the sewage. Before planting time a horse and plow form several inclosures on the surface to be planted, after the fashion of the long furrow seen in orange irrigation, the idea being to hold the sewage in a location until the fluid permeates the earth thoroughly and completely as would a good rain, that is, to a depth of three or four feet. This accomplished, it is allowed to dry sufficiently for working, when a cultivator is put on, and the ground from twelve to fourteen inches, the deeper the better, thoroughly cultivated and turned over. This is found in the soil at the Pasadena Sewer Farm to not only prepare the ground for the reception of seeds, but to render it perfectly "sweet," so there is no disagreeable odor, the hot sun acting as a deodorizer. So thorough is the work of Nature after this simple treatment, that the farm managers state that there has never been a case of illness that could be traceable to the sewage or as a result of working in it. A criticism of such irrigation has been made that certain fruits and grasses may carry the impurities, but this is obviated here by an exact system. Thus so complete is the original irrigation that a later application is not necessary, as in the case of pumpkins or squashes. Fruits, as strawberries or anything that touches the earth and lies upon it, are not raised.

The section of corn, which requires rain or subsequent irrigation, is flooded in lines, and the lower leaves, that are liable to come in contact with the sewage, are burned. Briefly, scientific methods prevail, combined with great care and common sense, resulting in success. The irrigation of this farm is an interesting operation. The writer observed it on one occasion, and supposed that the sewage pouring out was irrigating water, so apparently pure was it, there being no perceptible odor at a distance of several feet. This is due to the fact that the output of the sewage is more than 75 parts pure water that reaches the pipes with the deposits from water pipes, closets, etc. The pipe on reaching the farm is divided, and led about it in a way to produce the best results, so that one section can be flooded or the whole, the entire flow being at the command of the manager. In many European countries and in Australia methods have been tried which have proved extremely expensive. The Pasadena farm is the simplest that can be devised, being, in a word, deep irrigation and deep cultivating, soaking the ground for three or four feet and cultivating for nearly two feet—the deeper the better. Everything is made to pay on this farm. The refuse fodder is cleaned out by renting the ground to sheep herders at $3 per day, the animals eating it up clean. The amount of hay raised furnishes the city horses, the fire department, and others with their food supply, leaving an amount sufficient for the farm horses and an abundance to sell.

The farm, while in operation some time, is yet in a developmental stage, or while a practical business success is not old enough to produce its maximum result; and judging by the present progress, the municipality