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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.

RECLAMATION OF MARSH LANDS IN THE SOUTH.

The agricultural conditions of the coast and tidal river lands of South Carolina have been the subject of more or less discussion since 1878, at which time a report was submitted by a committee of the South Carolina Agricultural Society, suggesting certain radical changes in their management. Although many of the labor complexities then complained of have disappeared, the problem of the profitable utilization of these lands still confronts the proprietors. Mr. Elwood Mead, of the United States Department of Agriculture, has pointed out that the lands which may be used for agriculture are of two different classes—those of the coastal plain lying above high tide, a large portion of which are swampy and unfit for continued cultivation except in the most favored localities, and the bottom lands bordering the tidal rivers, which are unfit for use without the protection of banks or levees. Rice grows upon the river lands, and rice has long been a staple crop of the South Atlantic coast. It is a question, however, whether the plain lands may not be able to contribute more to the prosperity of their owners and the State than the more celebrated rice lands.

A strong sentiment has therefore developed in the eastern part of the United States for the drainage of tidal and swampy lands, especially in the South where large areas of swampy land abound, so infested with malaria-breeding mosquitoes that agricultural settlement and the successful establishment of manufacturing enterprises have been all but impossible. The irrigation and drainage investigators of the Department of Agriculture are co-operating with a drainage and sanitary commission appointed by the legislature of South Carolina for the purpose of improving the health of the communities about Charleston and increasing the land values. During the coming year plans for the drainage of new areas will be made, the work to be carried out by the State Drainage and Sanitary Commission with the aid of convict labor.

South Carolina and Virginia would, perhaps, be most benefited if the plans which have been formulated in various bills presented to Congress are carried out.

The surface of the watershed of the streams has been so modified by cultivation and especially by the removal of the primitive growths of timber and other vegetation, that the uniformity of flow in the streams found thirty years ago cannot be reasonably expected in the future. There has been, as a result, a falling off of the total annual rainfall, yet no apparent diminution in the maximum daily or monthly rainfalls. The flood height of the streams is greater at times, and less constant than formerly. The lesson taught by these observations are: First, that the diminution of annual rainfall does not necessarily lower the height of the river flood line, or the consequent height and strength of levees required to protect the land, though the maximum may not be reached as frequently as during periods of greater average rainfall; second, that the periods of light annual rainfall have a direct effect upon the quantity available at times when it is necessary to flood the rice. If this volume is too small the only water to be had is brackish or salt.

The South finds itself confronted by this dilemma: The growing of rice is too hazardous to be continued where there is danger from salt water. On the other hand, no other valuable field crop will grow on wet land.

In view of the investigation which was made by the Department of Agriculture, the area used for a century or more for the growing of rice must be abandoned and cultivated for other crops. The chief reason for this conclusion is to be found in the fact that the fresh-water supply required for flooding has become insufficient and uncertain. The use of brackish water and inadequate drainage has caused rice blight. No plantation along either the western or eastern branch of the Cooper River has any assurance of a fresh-water supply

from that stream. In 1904 no less than 2,552 acres planted the previous year were abandoned because of salt water. In 1905 only 1,115 acres were planted on this branch, and 1,222 acres on the east branch, making a total of 2,337 acres, and of this acreage 300 were watered from reservoirs. Prior to 1904, 2,065 acres had been abandoned, so that since 1890 two-thirds of the acreage formerly planted on these two branches has been abandoned.

Three things should be done to solve the problem: The existing levees must be strengthened, rebuilt, and made high enough to withstand floods; the inclosed lands must be ditched so that soil water can be removed to a depth of three feet; pumping plants must be installed to remove all such drainage water as cannot be removed by gravity through sluices or trunks.

Ditches can be dug which will drain the soil to a depth of fully three feet, making it firm and suitable for the growing of dry land crops and the use of such machinery as will be required in their cultivation.

The improvement of the coastal plain lands, which are estimated to include an area of 400,000 acres, only 50,000 of which are under cultivation, is a matter of vital importance. These lands require a gravity drainage and proper cultivation to make them productive. The coast lands may be drained as were the mosquito-ridden prairie marshes of Illinois and Indiana, now among the most productive and fertile areas in the land.

The first benefit to accrue from the drainage of the low lands in the Carolinas will be to make them sanitary, free from malaria, and attractive to those who contemplate the purchase of farm homes in the Carolina climate, which is most salubrious. With a general drainage system, which may be easily constructed if equitable State drainage laws are enacted, the further drainage of all the lands by means of the more elaborate system of under-drainage, which has proved so efficient in the improvement of low lands elsewhere, can be prosecuted by land owners as desired. These lands, when drained, will require but a fraction of the artificial fertilizing used on the higher lands, and will be in such a condition that a rotation of crops suited to the climate may be followed and the fertility of the land be maintained. If looked into carefully it will be found that the value of commercial fertilizers used during two seasons upon the high lands will in many cases meet the expense of such a drainage system as will be required to make the low lands both healthful and productive.

The entire drainage problem may be put as follows:

The coastal section of the State must be drained before it will be sufficiently healthful to attract thrifty and intelligent farmers. This can be done in such a way as to make the country sanitary, with the exception of the river lands, for \$5 per acre, and for high-class cultivation for \$10 or \$15 per acre. The tidal river rice lands, which are injured by salt water, should be converted into drained fields, and planted in upland crops. This may be done at a cost of \$15 per acre. If this were done on the two branches of the Cooper River, that section would be free from malaria and the finely-located residences could be occupied during the entire year.

A State drainage law should be enacted at the next legislature, and in the meantime the plans and estimates for the drainage of a few representative tracts should be made and discussed for the information of the public.

AUTOMOBILE RACING AND TOURING IN FRANCE AND AMERICA.

Two of the main automobile events of the year—the French Grand Prix race and the American Glidden tour—have attracted the attention of all automobilists. Of these two contests, the former, which was held in France on June 26 and 27, is the substitute arranged by the Automobile Club of France for the Gordon Bennett race—unfortunately a rather sorry substitute for an event that had become a classic in automobile annals by reason of its six years' dramatic success.

The rules under which the trophy was contested for, provided for an annual international race to be held in the country which won the trophy during the year previous. Each country was allowed a team of three machines, and these were usually selected, in France and America at least, by eliminating races of domestic machines. Not content with having won four out of six races, the French last year demanded a greater proportion of their machines in the race—a demand unjustified by their previous success and decidedly unfair to other nations. Consequently, they returned the trophy to the donor and organized the Grand Prix race, in which any manufacturer was allowed to enter a team of three machines. As a result the event lost its international character, although foreign nations were not excluded. France and Italy, however, were the only countries represented. The rules under which this race was run were somewhat different from those used heretofore. The race lasted two days, and was run on the Sarthe circuit—a triangular course some 62¼ miles in length. Six rounds were made each day by the

contestants. No repairs or renewals of tires were allowed other than those which could be made by the driver and his mechanic without outside aid. According to the rules, the racer was placed in a garage, at the end of the first day's run, and could not be touched until the start on the following morning.

The chief result of these regulations was the appearance of a new detachable rim. Fully-inflated tires were carried on extra rims. If a puncture occurred, it was only a matter of two or three minutes to remove the deflated tire and rim and apply a fresh one. Like nearly all high-speed automobile races, the Grand Prix was above all a comparative test of tires. Thus it was that a car fitted with the new device was able to win over more powerful cars which were dependent upon the usual method of repairing tires. A description of this rim will be found in the current SUPPLEMENT. It is a very useful device, especially for high-speed racing. We hope to see it fitted to some American cars in the coming Vanderbilt race.

Out of thirty-four cars entered in the race, but thirty-two started. Of these, nine only were foreign cars, six being Italian and three German. The cars were started at minute-and-a-half intervals, and one at least covered a first round at a rapid rate, the time of this French machine being 52 minutes and 19 seconds, which is equivalent to a speed of 74 miles per hour. Accidents and breakdowns came thick and fast, and more cars dropped out during the third round than in any other round of the race. One French machine overturned while its driver was trying to pass another car on a boarded-over portion of the road, due to the car's running off the boards and dropping into the sand. In some marvelous manner the driver escaped with his life, although he was pinned under the steering wheel as the car rested on its side. A mechanic was thrown twenty yards, but was merely bruised. One make of French car was fitted with wire wheels having very light spokes. In rounding a corner one of the rear wheels collapsed and the car was overturned, but without injuring the driver. Aided by his mechanic, he pluckily fitted no less than twenty spokes to the wheel and made a fresh start. Leaky radiators, cracked cylinders, flattened rims, and broken gear boxes, water pipes, and grease pipes, ended the careers of fifteen of the cars before the finish of the first day's race. The total distance of 384.44 miles was covered in the remarkable time, in view of the new regulation requiring the driver to make his own repairs, of 5 hours, 45 minutes, 30 2-5 seconds, or at an average speed of 66¾ miles an hour. The winner was Szisz on a 105-horse-power French Renault car. A Clement-Bayard driven by young Renaut was second in 6 hours, 11 minutes, 40 3-5 seconds; while Nazzaro, on an Italian Fiat, was third in 6 hours, 26 minutes, and 53 seconds. The average speed of the second and third cars for this half of the race was 62.1 and 59.66 miles an hour respectively.

In the second day's race the competitors started at the same intervals at which they arrived the day before. Immediately after the start each competitor was obliged to fill up his tanks with gasoline and oil. The worst accident of the race occurred on this day, through the overturning of one of the French cars, presumably from the breaking of the frame. The frame of a similar car collapsed during the first day of the race, and it is supposed that some similar accident caused the upset of the car just mentioned. Its driver was badly injured, sustaining a broken thigh and several fractured ribs. The third of the wire-wheeled cars had a steering wheel break, and ran off the road just as the other two had done, and one other French car, of the same make as the winner, overturned during this stage of the race. Szisz had maintained his lead throughout the entire second half of the race, and when he completed this half in 6 hours, 28 minutes, 36 3-5 seconds, there was great rejoicing. His total time for the 768.89 miles was 12 hours, 14 minutes, and 7 seconds, which corresponds to an average speed of 62.84 miles an hour. Nazzaro finished second, beating Clement by 3 minutes only. Their respective times were 12:46:26 2-5 and 12:49:46 1-5. These times correspond to average speeds for the entire race of 60.2 and 59.9 miles an hour. The only team to finish was the one consisting of three Brazier cars. One of these took fourth place in 13 hours and 54 minutes, corresponding to an average speed of 51.9 miles an hour. This make of car, it will be remembered, won the Gordon Bennett race both in 1904 and 1905. These races were notable for steady running, although the average speed maintained was not great.

The Grand Prix race has demonstrated the futility of attempting to build a car of tremendous power and comparatively light weight. Such a machine serves merely the grewsome purpose of imperiling its driver's life. If these high-speed races must be run—and they seem to be a necessity to appease the craving for sport—some other method of classification than by weight must be devised in the future. Either the piston displacement or the cylinder capacity would serve as a good standard. At all events, some method should