

dwells in the fields." The only inhabitants of the Campagna are the shepherds, armed with long lances and mounted on small and hardy horses, who are occasionally seen following or searching in the wilds for the herds of savage buffaloes and other cattle; and the few wretched beings that are to be found at the post-houses.

Many attempts have been made, but with partial success, to drain the Campagna. About three centuries before the Christian era, Appius Claudius, the censor, surnamed the Blind, stood forward as the first restorer of this tract of country. He carried across the morass the road which is still known as the Appian Way, which in magnificence has never been surpassed. It was not, however, till a century and a half after the making of the Appian Road that Cornelius Cethegus, the consul, undertook to drain the Pontine Marshes. Dugdale, in his "History of Imbanking and Draining," quaintly tells the story:—"In the year 593, when L. Amicius Gallus and M. Cornelius Cethegus were consuls, the Senate being in council concerning the provinces, because these seemed not sufficient use against the enemy for the ordinary forces of both the consuls (which are four legions besides the Auxiliaries and Socii), there was a motion made concerning the improvement of a great level of waste land lying under-water about forty miles from Rome, in Latium, which business was entertained with great approbation. . . . The consuls A. 566 had herein given a president, who, lest their soldiers should be idle, employed them in making highways. Hereupon it was decreed that one consul should attend the enemy (in Gallia), and the other undertake the draining of the Pompeine (Pontine) Marshes." The efforts of Cethegus were transient and impotent. Julius Cæsar found this large tract of country a prey to new desolation, and was about to restore it to fertility, when death suddenly put a stop to his plans. Augustus took up the work, and cut alongside the Appian Way a canal which was destined to receive the stagnant water, and to afford it an outlet. It was on this canal that Horace and Mæcenas embarked on their way from Rome to Brundisium. After Augustus came Trajan, who was followed by Theodoric, and in more modern times by several of the popes, who attempted, with partial success, the restoration of the territory. It remained for Pius VI. to do more for the Campagna than any of his predecessors had been able to effect. Immediately after his accession, he went to visit the Campagna. One of his biographers states that "He shuddered when, from the top of a hill, he saw at his feet the deep ravages of time, and of the inundations, the pestiferous fogs, which extended far and wide, and the dangers which ever threatened his sacred person, should he dare to tread the unsolid ground." On his return to Rome, he established a bank, under the name of Monte dei Marcegni, to receive the funds necessary for the enterprise, and in a little time the voluntary subscriptions amounted to 120,000 Roman crowns. Belognini, one of the engineers whose plans had been submitted to Pope Clement XIII, was immediately put at the head of the undertaking, and in 1777 Sain, an eminent surveyor, was ordered to draw a plan of the ground, and to indicate the spots in which the works might be begun with the greatest probability of success. Pius succeeded in draining 9,000 rubbi which were constantly under water.

The work that Pius VI left off is to be taken up—in fact, is already begun—by the King, at the earnest entreaty of Garibaldi. The king has headed the subscription lists, which are being rapidly filled up. With the wonderful appliances of the present time, it is to be hoped that in a few years more improvements will be effected than in the hundreds of years that have elapsed since Appius Claudius was Censor of Rome. It is scarcely too much to expect that Garibaldi may guide the ploughshare through the same fields which were cultivated by his great prototype, Cincinnatus.—*The Builder.*

\* For General Garibaldi's scheme for diverting the course of the Tiber and improving the Campagna 100,000,000 francs are needed. The shares are to be 100 francs each. The King promises to use his influence in order to induce the Government to guarantee 5 per cent. His Majesty heads the share-list. Garibaldi is said to be anxious to put himself in communication with engineers. He has addressed a circular to the English newspapers, in which he says,—"I hope that the English people will support the project for the diversion of the Tiber and the improvement of the Agro Romano. I propose that the shares should be 100 lire each, with a guarantee from the Italian Government."

It is expected that 500 men will be at work on the railway in Pontiac county by the 1st of June next.

## MISCELLANEA

CANADA OWNS 6783 vessels of various kinds, gauging 1,013, 718 tons.

The long pending contract for building a railroad 850 miles long from Laredo, on the edge of Texas, to Leon, 283 miles from the city of Mexico, has been signed by the Mexican President. The building of the route from Leon to the city of Mexico will be in the hands of a different company.

With the exception of small orders which are sometimes sent to Smyrna commission agents for crude stone to be directly shipped to the United States for use of American crushers, the entire product of emery is sent forward by the contractors to England, and all crushers are supplied from the stock of crude stone there.

The Mount Ceniz tunnel cost about £60 per lineal foot. This outlay included, however, the equipment of the road, &c. The Terre-Neire tunnel on the Paris, Lyons, and Mediterranean Railway, cost about £10 per foot. The Hoosac tunnel, which is carried through a formation of mica slate, and quartz, cost £60 per lineal foot.

EXPERIMENTS IN SUGAR BEET CULTURE—The following is a summary of the results of field experiments on thirteen farms in various parts of Germany in the culture of sugar beets. Eight tons of farmyard manure per acre gave upon a plot of a certain size 2,020 pounds of beets, with 13.5 per cent. of sugar, 1,120 pounds of Peruvian guano, "dissolved," or treated with sulphuric acid, per acre, gave 4,592 pounds of beets, with 14.1 per cent. of sugar. The manured plot gave at the rate of 289 pounds of sugar per acre in excess of an unmanured plot, and the plots in which guano was applied an excess of 508 and 640 pounds respectively.

TREE culture in the United States is becoming quite extensive. Under the Act of Congress offering 160 acres of land to any person who would plant 40 acres of them to trees and cultivate them for eight years, about 1,100 persons, it is stated, had taken up 170,000 acres of land in Minnesota, up to January. By the effort of the State and private and associated effort, it is estimated that 25,000,000 trees are now growing in Minnesota, besides those planted under the congressional act. A report on the subject says that the cost of planting and of cultivation is marvelously small, in many cases not exceeding from two to five cents a tree. The artificial culture of trees is coming more and more in vogue in California, and the demand for young trees to set out, this spring, is said to be very large.

WORK on the bridge over the Missouri river, at Atchison, is progressing as rapidly as possible, and the structure will doubtless be complete within the stipulated time. The American Bridge Co., of Chicago, is performing the work. The bridge will be 1144 ft. long, exclusive of approaches. It will consist of three fixed spans, each 260 ft. in length, and one draw span 364 ft. in length. The grade of the bridge will be 10 ft. above the high water mark of 1814. The approaches to it will descend so as to reach the second grade at Second-street, and the eastern approach will descend with a grade of 52 ft. per mile, for about a quarter of a mile, where it reaches the level of the Hannibal and St. Joseph and the Chicago, Rock Island, and Pacific railroads track. The bridge is located just south of Main-street, directly opposite the terminus of the Atchison, Topeka and Santa Fe and the central branch of the Union Pacific Railroad tracks, and nearly opposite the depots of the Atchison and Nebraska and Missouri Pacific railroad.

An enterprising Canadian has created a good deal of jealousy among American contractors who are anxious to improve the Sault Ste Marie Canal by underbidding them. The Oswego Times alludes to the matter as follows:—"An interesting question has been submitted to the Secretary of War. There are twenty-seven American bidders for the stone contract for the improvement of the Sault Ste. Marie Canal. The amount of appropriation is \$300,000. The Marblehead quarry near Toledo is the lowest American bidder. There is a Canadian bidder, who has quarries near St. Catharines, Ont, who has slightly underbid all the American bidders. The point raised is whether the Secretary of War is to construe the words of the lowest bidder to comprehend foreigners.