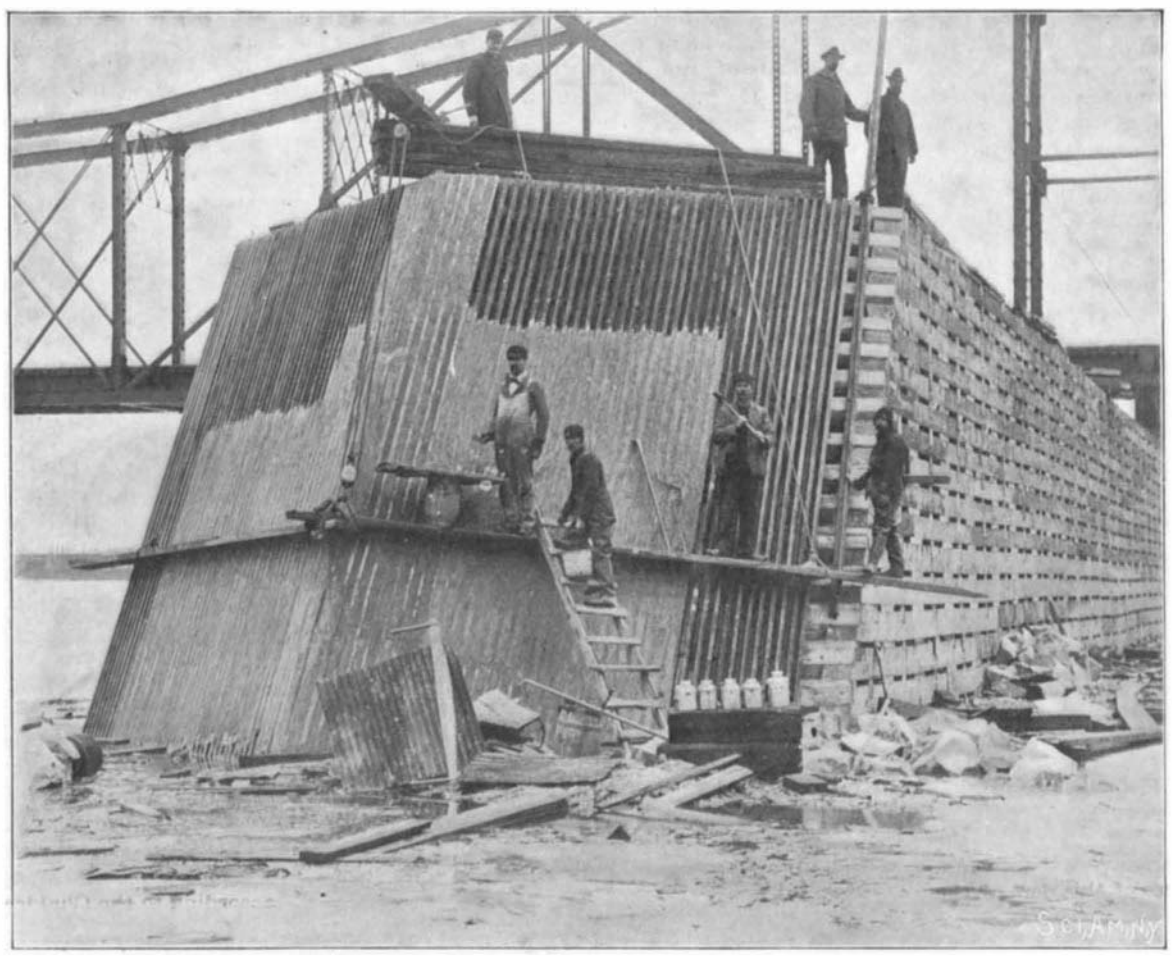
THE LATEST OF THE LARGE MISSISSIPPI BRIDGES.

The fact that the Mississippi River, running in a general north and south direction, intercepts the main trunk lines to the West, is responsible for some of the most notable of the great bridges of the world. The Bismarck Bridge, on the Union Pacific Railway, the Eads and the Merchant Bridges, at St. Louis, and the handsome structure designed by Morrison for crossing the river at Memphis, are structures whose fame is known the world over. The latest great crossing of the Mississippi is the symmetrical and altogether beautiful structure which forms the subject of the accompanying illustrations. It forms an important part of a new line of railroad connecting the cities of Davenport and Clinton, Iowa, with Rock Island and Moline, Ill. The railroad and the great bridge are something more than a mere connecting line between the cities named, for the towns at each end of the line are the meeting points of a number of the large railway systems of the West. The Davenport, Rock Island and Northwestern Railroad is located along the right bank of the Mississippi from Clinton to Davenport, from which point it swings with a long curve to the south before crossing the river. The line itself has been constructed since the middle of September last; but the bridge has been under construction for about two years.

The crossing is made up of seven fixed spans with a draw span over the main channel, its total length being 2,310 feet. Commencing at the Rock Island side, from which the accompanying illustration was taken, the bridge consists first of three spans of 200 feet, then a draw span 442 feet between the end pins, followed by four fixed spans, the first 365 feet in length and the others each 300 feet in length. The total length of the viaduct approaches is 850 feet, the spans of which vary from 30 to 70 feet in length. The superstructure, which was built by the Phœnix Bridge Company, is of the standard American type throughout, with built-up lattice, posts and chords, and eye-bars for the tension members. The bridge is carried upon masonry piers, the foundations for which were carried down by the pneumatic process. The draw span is electrically operated.



STEEL RAIL AND CEMENT FACING FOR PROTECTION OF PIVOT PIER—DAVENPORT BRIDGE.

THE LATEST NOTABLE BRIDGE ACROSS THE MISSISSIPPI.

On the Line of the Davenport, Rock Island and Northwestern Railroad.

Three 200-foot spans; one 442-foot draw span; one 365-foot, and three 300-foot spans; Viaduct approaches, 850 feet. Total length, 3,157 feet.

As the pivot pier of the draw span is exposed to floods and to a heavy flow of ice it is protected by a fender pier on the upstream side. This pier is a continuous timber crib 26 feet in width, 250 feet long and 28 feet in height, the water at this point being 7 feet deep at its lowest stage. The crib is strengthed by four interior longitudinal walls, and by a series of transverse walls spaced 8 feet, center to center. The nose of the crib at its upstream end is formed with an angle of 90 degrees.

To protect the cutting edge at the nose from heavy floating driftwood and the action of ice, it was at first proposed to cover the inclined surfaces with a fencing of heavy steel plates; but owing to the difficulty in fastening and holding the same, and providing the necessary backing, it was decided to sheath the nose with a protection of old rails. The rails which weigh 65 pounds to the yard were laid up the face of the slope in 28-foot lengths. They were spaced 5 inches apart, center to center, and were fastened with ordinary railroad spikes to each horizontal course of cribwork. They were also secured by drift-bolts which passed through holes in each side of the flanges, and were secured by nuts on the inner side of the timbers of the cribwork. After the rails were all in place the intervening spaces were filled up with cement mortar so as to afford a practically smooth surface and avoid any roughness which would tend to cause a lodgment of driftwood or ice against the nose. The whole of this important work was designed and carried out by Mr. C. F. Loweth, M. Am. Soc. C.E., to whose courtesy we are indebted for the accompanying illustrations and particulars.

A Novel Apartment House.

Plans have recently been filed in New York city for a seventeen-story apartment house, says Carpentry and Building, which has some novel features. It is to be built on Fifth Avenue, just across the street from a famous restaurant. The elevator shafts of the new house will be sunk deep in the ground so that passengers can enter a tunnel extending under Fifth Avenue and communicating with a system of elevators connecting with the restaurant which will be remodeled so as to reach the tunnel entrance. In this way the residents of the apartment house can, by means of an underground passage, reach the restaurant and return to their rooms without the necessity of going out doors. The tunnel will be handsomely fitted up and the building will have a swimming tank of large area and luxurious accessories.

Value of Farm Animals.

The statistician of the Agriculture Department has made some interesting computations as to the number and value of farm animals in the United States. On the first of January there were 13,537,524 horses, 2,068,027 mules, 16,292,260 milch cows, 27,610,054 other cattle and 41,883,065 sheep. There has been a total increase in value of the country's live stock during the year 1899 of $216,000,000, not including the increase in the value of swine, no figures concerning which are at present available. The total value of farm animals of the United States on January 1, 1896, was $1,997,010,407. The present value is not less than $2,213,010,407. The number of horses has decreased largely. There are nearly 3,000,000 fewer horses in the country than there were seven years ago and there are fewer mules than since 1886. The average price per head for mules is $53.65. This is a higher price than has been paid since 1894, and the result was evidently produced by the unprecedented demand for mules by the Spanish-American and Transvaal wars.

Rifle Ranges for Cities.

The events in South Africa have brought about a widespread interest in England in rifle practice, and what is wanted is some system of closed safety short ranges, such as are so much used on the Continent, so that the members of the rifle clubs can attend them. The firing point is usually closed in, and on the inside is a sloping bullet-proof penthouse roof, which effectually prevents any accidental shot flying off into the street. High walls with cross screens at gradually increasing distances, in which are openings corresponding to the targets provide for the safety of the neighborhood, while a further precaution is provided in the shape of a sloping screen above the targets themselves. These could be self-registering, or a covered way to a marker's butt might be easily made from the firing point. An illustration of such a daily range is given in a recent number of The Daily Graphic. In France shooting at a mark forms one of the lessons taught at the primary schools, and there are in that country 1,800 shooting clubs, with a membership of 14,000. Switzerland has 3,300 rifle clubs, with nearly 200,000 members, out of a population of nearly 3,000,000.

YALE UNIVERSITY is to establish a school of forestry. The large estate bequeathed by the late Prof. O. C. Marsh will be used as a school of botany, and will also be used for the present as a school of instruction in forestry. There is certainly a great need for thoroughly scientific schools of forestry, when extremely valuable growths of trees are now rendered entirely worthless.