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Improved System for Trestle Bridges.

The transit of streams in military operations is often one of the most embarrassing incidents of a campaign. Where the channel can be forded no delay usually occurs, yet even then when the banks are precipitous, or the approaches marshy, some means must be provided for the safe passage of artillery trains and wagons. During the whole of the present war, and up to the ignominious flight of the rebel leaders from their capital, bridges have always been destroyed where practicable, and no means have been left untried to detain pursuit by the destruction of them. If time permitted and materials were at hand, a structure might be made for the service required, but when pursuit is hot, and an enemy follows vengefully behind, there is but little time to construct even, setting aside planning, a suitable structure. In such an emergency the bridge here shown will prove a most valuable acquisition, for with the aid of a chisel and an axe, the trestles and floor timbers can be got out most speedily, and the several parts put together rapidly and substantially. The following description will render its construction plain to every one.

The floor is supported by the beams, A. These are mortised and fitted over the uprights or stanchions, B, the latter being hewed square on the top side. A key, C, driven from below, serves to sustain the weight of the floor and superincumbent burdens, and also to bind the whole firmly together. Cross braces are then inserted in notches in the stanchions, and the trestles are complete. The bridge is ballasted against lateral disturbance by stones piled against the bases of the stanchions, and the radial arms, D, serve to prevent the stones from scattering. An uneven bottom is made fair by placing a hewed timber on the ground, and any minor exigencies that may arise are easily provided for in a similar way. The bridge is one of the simplest and strongest for a temporary structure we have ever seen. Its principle can be adopted for scaffolds used in erecting buildings, and the saving of time, nails and material generally, should induce builders and capitalists to examine it. No charge is made for the use of it by the Government in whose interest it has already been successfully used. At the time when Suffolk, Va., was besieged by General Longstreet, one of these bridges was thrown over a wide stream having marshy approaches, in a few hours. Another one was also thrown across the Passaic river rapids, below the Passaic Falls, near Paterson, N. J., where it was temporarily left. Col. Andrew Derrom, of the 25th Regiment New Jersey Volunteer Infantry, is the inventor of this system of bridges, and a patent is now pending on it through the Scientific American

Patent Agency. For further information and for rights to use this system for bridges or other purposes, address Col. A. Derrom, at Paterson, N. J.

South American Jerked Beef.

Jerked beef, or beef dried in the air, is being largely exported to England, where it is consumed by the poorer classes; it being sold at 6 to 10 cents per pound, or three pence, English money. It is not very delicate food, being tough and stringy, but is said to be better than going without meat altogether. Captain Basil Hall, in his "Journal in Chili, Peru,

color, and owing to the heat and dryness of the air speedily loses much of its moisture. The meat is afterwards exposed to the sun till thoroughly dried, and being then made up into great bales, strongly tied around with a net work of thongs, becomes the jerked beef of commerce.

The Use of Soda in Boiler Incrustations.

As the character of the incrustations which are deposited in steam boilers varies greatly with the locality, it follows that no one substance can be recommended as a specific for all cases. In an article on the preservation of steam boilers, the London *Mechanics' Magazine* mentions, incidentally, a case where soda was used with good effect:—

"But incrustation is sometimes formed under peculiar circumstances and cannot be entirely removed by the blowing-out apparatus alone. In general a small quantity of carbonate of soda introduced into the boiler is found to have a very wholesome effect, but soda should only be used in boilers provided with a scum-pipe, as otherwise the soda, combining with the grease in the boiler, produces foaming in the water, which leads to priming. We have previously stated our views with regard to 'boiler compounds,' and we find the general testimony to be against them. As a rule they are found to be expensive, some useless, and others injurious. It would, however, be unfair to close the question with such



DERROM'S SYSTEM FOR TRESTLE BRIDGES.

and Mexico," gives a very detailed and interesting account of the ox-slaughtering in those countries, and describes the mode in which the jerked beef is prepared. The three men (he says) who had been employed in cutting up the bullocks now commenced an operation peculiar, I believe, to South America—namely, the preparation of what is called by us jerked beef, a term probably derived from the local name *charque*. The men seated themselves on low stools in the different cells, and began cutting off the detached portions of meat into long strips, or ribands, uniform in size from end to end; some of these, which were cut from the larger pieces, being several yards in length, and about two inches in width. To perform this operation requires considerable expertness. The piece of meat is held in the left hand, and at each slice is hitched round, so as to offer a new place to the knife, and in this way the strip of meat seems to unwind itself like a broad tape from a ball, till at last nothing remains. We tried to perform this ourselves, but continually cut the strip across before it had attained any length. When the whole had been treated in this manner it is allowed to hang under cover for a certain time, during which it acquires a black

general sweeping condemnation, when exceptions do here and there crop out. But these exceptions are very rare, and only become such by the compound being used in cases to which it is specially applicable, and not as an indiscriminate remedy for corrosion.

"One instance of the efficacy of a boiler compound which has come under our notice is that of the boilers at the Phenix Iron Works, Manchester, belonging to Messrs. Elce. The water used is drawn from the Ashton canal and is strongly acidulated, giving much trouble. After several months' use of a boiler compound (Wood & Hall's) it is stated that a very successful result ensued. One of the principal ingredients in this compound is a strong caustic alkali, which converts the acid in the water to a sulphate of soda, the lime, from which the acid has been liberated, falling as a powder to the bottom of the boiler to be blown out, or being carried off by the scum-pipe or other means. There are a few other compounds well spoken of, but in any case the utmost caution should be observed in their use."

We learn that the iron-clad *Dictator*, having completed some alterations, is nearly ready for a trial trip.