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The Volunteer Review,

AND

MILITARY AND NAVAL GAZETTE.

"Unbribed, unbought, our swords we draw,
To guard the Monarch, fence the Law."

OTTAWA, MONDAY, MARCH 25, 1872.

Amongst the varieties of form and material of which pontoons have been constructed, those made of what is known as India rubber cloth (which is simply strong cotton coated with a preparation of white lead, sulphur and India rubber) are by far the best adapted for efficient service, combining the greatest buoyancy with the smallest possible weight, and the most easily transported, occupying no more space than a corresponding quantity of cloth.

They are made in a cylindrical form pointed at the ends pretty much in the shape of a cigar, each cylinder being 20 feet in length, twenty inches in diameter, and divided internally into three distinct air-tight compartments, each of which has a stop-cock through which it is inflated.

Three of these cylinders are joined by connecting webs of great strength, and form a boat or buoy rather of twenty feet long by five feet wide of great buoyancy and stability, weighing only 260 lbs., and when inflated presenting an area of 100 square feet and capable of sustaining a weight of 10,000 lbs.

One of these pontoons will easily carry twenty soldiers and can be paddled against a pretty stiff current, around each cylinder

are three wide bands in which side loops are formed; by passing a small bar of wood, through them a considerable sized raft of pontoons can be formed which may be paddled across a large piece of water or used as a flying bridge.

In order to prepare each pontoon as a bridge pier, it will be necessary to construct a "pontoon frame," this consists of three planks of white pine, 18 feet in length, 4½ inches wide and two inches thick, and two transoms of oak, four feet seven inches in length, 4½ inches wide, and 1½ inches thick, with six cleats, screwed on to the under side arranged in pairs, 4½ inches in the clear to embrace the planks, one of which are laid on each pontoon to which it is secured by lashings passing through copper staples and reeved through holes in the ends of the transoms, and around blocks in the fore and aft side loops of the pontoon, the lashings are of half inch rope in lengths of about five feet, having one end whipped and the other formed with an eye.

An ordinary kedge anchor weighing 45 lbs. is used to moor each pontoon, the cable is inch rope and about thirty fathoms in length, a mooring bar of hickory or oak, ½ foot long and 2½ inches in diameter is passed through the three end loops of the pontoon to which the cable is attached, the pontoons are moored at a distance of eighteen feet apart from centre to centre.

As it generally happens that near shore the water is too shallow to float pontoons, trestle abutments are formed at the usual distance from the next pontoon to the shore.

The trestles are composed of two pieces to each leg, each piece is 5 feet long 6 inches broad, and 3 inches thick, pierced with 1½ inch holes in two rows, the holes of one row being opposite the intervals in the other, they are framed with two sills, four feet long by four inches square, and braced by four braces four inches wide by two inches thick, the upright pieces are six inches apart in the clear and are connected at top by a cross piece three inches square, and a belt through it, at bottom by two sills crossing the others at right angles and halved into them of the size and dimensions of the sills before described, the whole so framed as to admit of being taken asunder for convenient stowage in transportation, a cap sill sixteen feet in length, 6½ inches broad and 4½ thick, is placed between the uprights of the trestles confined in place at the proper level by bolts passing through the holes described.

In actual practice there will be considerable variation in the mode of proceeding, temporary abutments are sometimes substituted and in many cases considerable excavation would be necessary to render the approaches available.

The bridge stringers or *balks* as they are technically called, are of white pine or spruce, 19½ feet long, 4½ inches square, they

project beyond the middle of the pontoons at both ends, a hole 1½ inches by 3½ for the passage of the lashings is made nine inches from each end, there are generally five of these *balks* to a bridge twelve feet wide.

On these are lashed *chesses* or plank twelve feet long, twelve inches wide and 1½ inches thick, a piece one foot eight inches long and one inch wide is taken out of each end for the passage of rack lashings, those are of half inch rope, eight feet in length, the two ends whipped and tied with a square knot, it is passed under the balk and firmly lashed; side rails of the same dimensions as the balks are lashed to the chesses and balks.

A sheer line formed of heavy two-inch cable is used for spanning rivers with a gentle current, the pontoons are attached to it by head lashings or for crossing rapid streams with a flying bridge and for a variety of other purposes; pontoon paddles and a variety of small stores are attached to this bridge equipment including sets of wheelwrights, carpenters, blacksmiths, riggers, and rubber manufacturers tools, no description of those are necessary.

This description of pontoon is undoubtedly the best, lightest and most compact in use, each bay of such a bridge as has been described will weigh 1,560 lbs., including pontoon, 1,820 lbs.; thirty three pontoons will enable a stream six hundred feet wide to be bridged.

An infantry soldier fully equipped, weighs 180 lbs., and will occupy in marching 2½ feet square, so that marching in column of fours the weight on the pontoons, including the weight of roadway, will be about 6,600 lbs.

It is usual for cavalry passing a floating bridge to dismount and lead their horses, a cavalry soldier and horse fully equipped will weigh about 1,300 lbs., and if mounted occupies about ten feet in length, if led twelve; marching in files and leading their horses a weight of 5,460 lbs. will be on each bay of the bridge; mounted, the weight would be 6,240 lbs., so that they could ride over in safety.

The following table will show the weight of field and siege artillery now in use—

	lbs.
6 Pounder, carriage and implements	3,178
12 do do do	4,428
12 do Howitzer do	3,173
21 do do do	4,002
6 do Caisson, implements, &c.	3,509
12 do do do	3,806
12 do Howitzer do	3,782
24 do do do	3,086
Battery, waggon for stores, including	
250 lbs. forage.....	3,821
Forge for repairs.....	3,383
do shoeing.....	3,370
24 Pounder, siege gun and carriage	9,200
8 Inch Howitzer do do	6,250
The 12 pounder is the heaviest gun in the	
train, with six horses it will occupy 43	