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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, APRIL 8, 1872.

LIEUT COLONEL WAINWRIGHT GRIFFITHS, at present on a tour through British Columbia, has kindly consented to act as the Agent for the VOLUNTEER REVIEW in that Province.

The Italian Army have adopted a bridge system nearly similar to the Austrian, the trestles being only of two heights.

Their pontoons are also alike, but are nineteen feet eight inches long, five feet nine inches wide at top, and nearly three feet deep, they are capable of being joined together, for a single roadway, a single batteaux is used, for a heavier or larger bridge two joined at the stern forming what is technically called a barque.

Made of pine this batteaux weighs 720 lbs, and has a flotation of 16,000 lbs., a bark has just double that capacity.

The barks and side rails are twenty-six feet three inches long, four three-eighths inches broad and the same depth, having strong strap hinges about eight feet long in the middle to permit their being folded in two for more convenient transportation.

The chasses are of pine eleven feet six inches long, one foot one inch broad and 1½ inch thick.

The ordinary bridge has a roadway ten

feet six inches wide, borne on five balks per bay, if having batteaux supports; or seven balks, if having barques support; six different classes of bridges are formed under this system, by batteaux, barks, rafts of batteaux; of barks, (two kinds) and successive barks, using from five to thirteen balks in the roadway.

For transporting material for such a bridge as first described 114 yards in length, 17 six horse carriages are required if the supports be batteaux; if barks, twenty-nine carriages; the waggons have the peculiarity of the front wheels being very low, turning under the body, but they are very heavy.

In the Russian Military system trestle bridges can be hardly said to have a place, like our own country, the rivers are generally on a large scale and the Military bridge system is almost of necessity restricted to floatation.

The principal distinguishing trait of the Russian system is the employment of *canvas* covered pontoons or batteaux of the following dimensions: length at top twenty-one feet, at bottom eighteen feet four inches, width five feet four inches, and depth two feet four inches. The skeleton consists of two side frames connected by moveable transoms, all of four inch scantling.

The canvas cover has both sides t. red with a composition applied hot of hempseed oil, strong loam, India rubber, wax and soot. It is ten feet eight inches wide, thirty feet long in the middle and twenty-three feet three inches along the edges. It is brought over the ends of the skeleton frames and lashed to the top transoms; it is secured to the sides by small nails driven into the top string pieces through eye let holes in the edges of the cloth.

A plank is laid on the bottom for the pontoons to stand on, with frame and cover complete, it weighs 718 lbs. and has a floatation capacity of 13,428 lbs., it must be a very portable batteaux.

The barks are of pine twenty three feet four inches long, five inches deep and four inches wide, they are connected by a series of iron bolts and keys with those of the adjacent bays and can be adjusted to make spans of sixteen feet 7½ inches, eleven feet eight inches and of eight feet when forming a bridge to pass siege artillery, four balks are used with the former bays and six with the latter.

The chasses except four for each bay are twelve feet long, nine inches wide and 1½ inch thick; the four being of the same length and thickness, but one foot six inches wide.

They are formed into bridges of 124, 149, and 172 yards in length, except for siege artillery, and then it is only ninety three yards; the width is twelve feet in all those bridges.

The number of vehicles required for transportation is sixty-one with 358 horses, each waggon when loaded with pontoons,

chasses, balks, and equipments, weighing 2,340 to 2,574 lbs.

In no country in the world has the system of pontoon bridges been so thoroughly tested as in France, that adopted requires for its transportation seventy-seven carriages and 500 horses, and is designed for a bridge of 263 yards in length by 12 feet 9½ inches in width, and may be divided into four sections, each complete in itself forming a bridge sixty nine yards long.

The trestles used are similar to those already described, and need not be recapitulated.

The batteaux is a flat-bottomed wooden boat thirty-one feet long for a length of sixteen feet; it has a section of five feet seven inches at top, four feet four inches at bottom, and two feet seven inches deep; the bow eight feet nine inches in length, diminishes to two feet six inches in width and has a sheer of 5½ inches; the aft part or stern diminishes to two feet six inches in width and has a sheer of three inches.

Each batteaux weighs 1,455 lbs., has a floatation of 18,455 lbs., can carry twenty-five soldiers, is very useful for disembarking troops and can be navigated by five men in a rapid current, it can be carried by sixteen to twenty men.

The balks are of four kinds, but each four three-eighths inches square, they are 26 feet three inches, twenty feet eight inches, nineteen feet eight inches, and 6 feet 6½ inches respectively in length.

The chasses are twelve feet 9½ inches long, thirteen inches wide and 1½ inches thick.

The material for a batteaux bridge on this system are eight abutments, eight trestles, thirty-two batteaux, four mooring boats same as batteaux but a little flatter, 339 balks, 784 chasses and 32 anchors forming a bridge of forty-one bays, 262 yards long.

The abutments being eighteen feet three inches, trestle bays 16 feet 7½ inches and batteaux bays 19 feet eight inches apart, with five balks to each bay; can be safely loaded with 12,500 lbs.

The following is the formula for calculating its stability:—

Volume of batteaux.....325 feet.

Weight of water.....62½ lbs. per do

" of batteaux after saturation.....1,540 lbs.

Weight of bay of flooring...1,760 lbs.

325 by 62½ (1,540 × 1,760) 17,012 lbs.

The maximum load would be as follows. lbs.

Infantry when in column of fours	
open order.....	4,836
do do close order.....	9,843
Cavalry troops, men mounted.....	6,028
Artillery 12-pdr. and 2 pole-horses	7,447
do 24-pdr. siege pieces, do	11,964
Infantry routed without arms or	
arms or baggage.....	15,297

The great recommendation of this system is its simplicity, it is undoubtedly heavy, but it is also safe and stable.