roads which often form the only means of communication through Canadian forests. This was observed in the earlier campaigns of the American war, and lead ultimately to a considerable diminution in the proportionate number of guns as compared with infantry. For siege trains there would be little need in a Canadian army, as happily there are few fortifications to besiege; but on the other hand there appears to be scope for garrison artillery which may be, and, I believe, is organized with great success in the towns and villages on the Lakes and sea board of the Dominion. A knowledge of gunnery supplemented with but slight and easily acquired instruction in field fortifications and with the assistance of good plans, would enable the population of these towns and villages in great measure to provide on the threat of war for their safety against predatory and unsystematic attacks.

The exigencies of the settler's life and especially the needs of the lumbermen tend to the cultivation of rudimentary, but most useful engineering knowledge, which a little teaching would render available for military purposes, thus improvising a corps of engineers for service in the field.

Of infantry, the mainstay of an army there is little to be said especially applicable to Canada, except that for wood fighting and for working in extended order greater knowledge is required from officers, and higher discipline and more perfect steadiness from the men, than when manœuvring in the open. The officers should be able rapidly to avail themselves of the advantages of ground, and those of junior rank should be capable of acting independently, whilst the men must have confidence in each other, and possess the steadiness and discipline which will lead them to to individual exertion, and to a careful system of husbanding their ammunition.

The proportion of the several arms in each military district having been determined, their relative proportion in peace and war should be approximately fixed, and the best method ascertained of rapidly augmenting the active force on the threat of hostilities. Here experience indicates, and notably the knowledge gained in the American war, digested, and so to speak, codified by General Sherman, in his very able recently published memorandum, that to increase and recruit regiments already existing, is a far more efficient method of augmenting and keeping up an army, than by replacing with new regiments those that may have suffered by active service in the field. He especially instances the value attached to the Wisconsin regiments, which in contradiction to those furnished by other States were supplied by fresh recruits, in place of being replaced by new regiments.

Having thus briefly glanced at the composition of a defensive force, I propose to turn to a most important matter connected with the military organization of the country, viz.:—the duties of the staff, and especially of the officers of the higher grades. Irrespective of their ordinary work of commanding and inspecting the militia, on the Deputy Adjutant Generals and their assistants must devolve the duty of procuring, and systematizing reports on all that would relate to the defensive capabilities of their several districts. The head quarters at Ottawa should be in possession of the most accurate information, in order to compensate by the facility with which plans of defence could be prepared, and organization carried out, for the very imperfect defensive condition of the country. All places that it would be desirable to fortify in case of war, should be designated, and plans of suitable works with estimates as to the amount of labor, and of time necessary for raising them should be ready at hand. Not a block house, or coast battery should be omitted, and in cases where scarcity of earth or other considerations would prevent the construction of earth works, the fact should be noted, in view of the need of more permanent fortifications. These plans and specifications would be carefully examined at headqurrters, where the defence of particular localities should be subordinated to the general plan for the protection of the Dominion. The Deputy Adjutant Generals should also select the best places for the position of troops in the event of an outbreak of hostilities, together with schemes for offensive and defensive operations in the several districts. Accurate rolls of the number of able bodied men, of horses, of carts and waggons, should also be in their possession, together with the quantity of rolling stock on the several railways, their capabilities for transport of cavalry, artillery and infantry, especially in regard to the fitness of the stations, and platforms for entry and departure. All roads, bridges, ferries, and fords should be well examined, the character of the roads, whether metalled or merely country roads shown, the strength of the bridges calculated, and the fords explored. Then again estimates should be made of the amount of provisions which the several districts could furnish, and of the number of men and horses that might be raised for military purposes without destroying hopes of harvest. These are matters about which information could be readily obtained and arranged in peace time to the advantage of the staff officers employed, and to the great economy of time and labor when threats of war might necessitate hurried preparation. They are the details, the mastery of which by the staff is said so greatly to have assisted the German commanders in their invasion of France, and which from being more easily collected, could be even better systematized for defensive than for offensive purposes. Not that information of the power and means of attack on the part of our neighbors should be neglected: in a most friendly and philosophical spirit, their capabilities of aggression, and the weak points in their defensive preparation should be guaged by our staff, so that if need arise and opportunity offer, the theatre of war might be transferred across the frontier, an arrangement which would suit the people of Canada far better than fighting on their own soil.

Such sketched very broadly and without any attempt at detail, appear to be the subjects towards which those who are interested in the military condition of the country might direct their attention. One important consideration has, however, been omitted, viz.:—how would the marine department be able to meet the strain which war would immediately put upon it? As has been shown, the defence of the country depends in great measure on its capability for maintaining command of the water way of the St. Lawrence, at all events as far as the western end of Lake Ontario. Gun boats would therefore have to be quickly improvised, river and lake steamers would have to be altered and adapted to warlike purposes, as was done during the American Civil War. Whichever power could be first on the water would probably secure most important advantages, in fact the defence of Ontario may be said mainly to depend on securing the command of the Lakes, whilst on the safety of the canals and the security of their locks would hinge the possibility of gun boats sent from England being able to reach the waters above the St. Lawrence rapids. Consequently plans should in time of peace be prepared of the best method of converting the fleet of river and lake steamers into vessels of war. Their armament should be ready, and means at hand for coating at least some of them with extemporized armour plates. A Marine force might with great propriety be enrolled in time of peace as a supplement to the Land force, whilst every detail in respect to the inland navigation, and of the class of vessels best suited for the defence of the various rivers, canals, and lakes should be in the hands of the Admiralty in England. To the command of the inland waters was the success of the Northern Armies in the American War in great measure due, especially at its commencement, and this lesson should not be lost on those who have charge of the defence of Canada. How nearly the "Merimac" hastily equipped at Norfolk, annihilated the Northern fleet, and prevented the landing of Maclellan's army in the York Town Peninsular, will be in the remembrance of all who took an interest in that great struggle, and there is little doubt but that a repitition of a similar event might make or mar the most carefully prepared schemes of Canadian defence.

I will now conclude this very imperfect sketch of the subjects which appear to me to be worthy of consideration in reference to the defence of Canada by an attempt at realizing what would probably occur in the event of anticipated hostilities. Suppose, and here again I would urge that my supposition refers to an event which, judging by recent appearances, is as unlikely as the disruption of the States themselves, that our neighbors and ourselves fell out, that intelligence of very disagreeable diplomatic notes had reached Canada, and that we had heard that unprecedented activity prevailed on the one hand at Portsmouth and Chatham, on the other, at New York, Philadelphia, and other naval stations in the United States.

To be Continued.

Sir William Armstrong is making considerable progress with the loading apparatus for the turret ship *Thunderer*, and she will be ready in a very short time to receive her guns. The loading is to be performed by hydraulic power, and the apparatus devised is somewhat similar to that proposed by Mr. Stevens, an American, some years since. The gun is allowed to recoil when fired until it is entirely within the turret, when the muzzle is depressed almost to the level of the deck, the turret is wheeled round to a certain position away from the enemy where the charge is raised to its mouth on a truck, and is rammed home by a piston which comes up through the deck. This movement is rapidly performed, and as the turret returns to its old position the gun is run up ready for firing. The hydraulic pumps are worked by steam direct from the ship's engine, and several ingenious improvements have been introduced.

As the rose tree is composed of the sweetest flowers and the sharpest thorns—as the heavens are sometimes overcast and sometimes fair, alternately tempestous and serene—so is the life of man intermingled with hopes and fears, with joys and sorrows, with pleasure and pains.