

will not be esteemed bad taste to mention the name of the Adjutant General, Colonel Robertson Ross, whose public services in connection with the administration of Colonial affairs have already been sufficient to entitle him to distinction. We merely mention the matter because the public judgment has already pronounced him worthy."

We not only entirely concur with our contemporary in the matter and tone of his article, but we are sure the Canadian Army and people will endorse the idea, that any honor conferred on the Commander in Chief should carry with it a title commensurate with the services he has rendered this country and the Empire.

We are aware that the Sovereign is the source of all honour, but we do not know the *modus operandi* by which its flow is set in motion. It will not, however, be out of place to remark to whoever has the initiative in the process that the army and the people look in this case for a very marked and decided expression of the Sovereign's approval of the services of a soldier that has organized the finest and best military force in the British Empire, not even excepting the Regular or Imperial Army.

It is not necessary to recapitulate the services of Colonel P. ROBERTSON ROSS in this connexion. Although comparatively a young man, he has had professional experience of a varied character in almost every quarter of the globe. Nearly three-fourths of his life has been spent in the army; and we have only to turn to the successful administration of our own military system and the complete organization he has given it, to see how well that matured experience has been turned to account in the service of his Sovereign. We say, then, honor to whom honor is due, and with no sparing hand either.

In the last issue of the VOLUNTEER REVIEW a full description of Mr. LAY's Torpedo Boat was given as well as the reasons which induced us to oppose the whole system. It was not anticipated at the time that our views would receive confirmation from a very unexpected quarter—indeed, no less than the inventor, a *la Yankee*, of the first monitor, Capt. ERICSSON, whose letter, as published in the United States *Army and Navy Journal* will be found below.

It was our intention to have given our readers a whole history of this so-called torpedo system, but press of other matter and the natural reluctance to run it into the last and first numbers of two volumes, as well as other circumstances, compelled us to leave over the articles till the opening of the Seventh Volume, in which we shall endeavour to furnish every detail connected with this very interesting subject.

Our contemporary the *Broad Arrow* has gone to some trouble to make a comparison of the naval strength of Great Britain with that of the United States. No reading man out of

England ever gave the latter credit for being a great naval power, and as far as that is concerned Canada could put a more effective, as well as efficient, fleet in action to-morrow than the United States possesses altogether. When it becomes necessary for a great country to resort to submarine mines for the first line of harbor defence, it is very evident that State does not possess a navy. It is equally evident she cannot improvise a naval force, and, therefore, is compelled to resort to a *scarce crow* which it is pretended is found in the torpedo system.

If British statesmen were not so besotted with the relationship idea, JONATHAN would give JOHN BULL very little trouble, and would be in the condition he really occupies—that of a vicious youngster, with a strong tendency to *kleptomania*, requiring to be well watched and occasionally chastised.

NEW YORK, December 10, 1872,

Hon. G. E. ROBERTSON, Secretary of the Navy.

"SIR.—I beg to call your attention to the accompanying description of a moveable submarine torpedo, a copy of which I forwarded April 13, 1870, to Vice Admiral Porter and to the Chief of the Naval Bureau of Ordnance. I also at the same time, forwarded copies of the same description to the Committee of Naval Affairs of the Senate and of the House of Representatives, in order that Congress, as well as the Navy Department, might be informed of the fact that a submarine torpedo had been devised capable of being propelled under water and directed to any desirable point. The description of the moveable submarine torpedo having thus been placed before the Executive officers of the Navy Department and before the Naval Committees of Congress, it was taken for granted, in view of the simplicity and obvious efficacy of the device, that the Navy Department would at once order an investigation of this new system of coast defence. It will be proper to mention that I was fully prepared at the time of forwarding this description—and have been ever since—to construct the torpedo, at my own cost and risk, complete for practical test. Nor, will it be irrelevant to advert to the fact that I have been urged by persons well acquainted with the state of the naval defences of the country to present a special application to the Department. Had the description referred to not been sufficiently clear to enable the officers of the Department to form a correct judgment of the nature of the invention, it would have been my duty to adopt the course suggested; but, since the detail of the mechanism was described with such minuteness that any skillful engineer could construct the same, the inaction of the Department in the matter rendered the inference irresistible that a moveable submarine torpedo do not form part of the means by which it is intended to defend the coast and harbors of the United States. The recent official trial of a torpedo boat at Newport indicates, however, that it is not intended to dispense with moveable submarine torpedoes for coast defence. Accordingly I have forthwith constructed such a torpedo agreeably to the accompanying description, provided the Department will do me the favour to appoint a board of naval officers with instructions to institute a rigorous comparative test of the efficiency of my submarine

torpedo and that of the torpedo boat referred to, built by Messrs. Clute.

"Thinking that an explanation of the main features of the rival inventions—the torpedo boat and the moveable submarine torpedo—might influence your decision, I have the honor of submitting the following statement.

"1. The torpedo boat, floating at the surface of the water, will be easily crippled by a watchful enemy, even in a calm, while in a seaway its destruction will be inevitable.

"2. The submarine torpedo, being immersed from fifteen to twenty feet below the surface of the water (regulated according to the draught of the vessel attacked), will advance toward its destination in spite of watchfulness and a rough sea.

"3. The explosion of the torpedo boat takes place too near the surface to effect seriously an iron-clad ship carrying twelve inch thick armour six feet below water line.

"4. The submarine torpedo explodes near the bottom of the vessel struck, at a depth where the pressure and resistance of the surrounding water renders the force of the explosion so great that a charge of 400 lbs. of nitro glycerine will wholly destroy the lower part of the structure. The adopted water compartment system will therefore offer no protection against the effect of such an explosion.

"5. The motive power of the torpedo boat is of a dangerous nature owing to the enormous pressure of the acting medium, 600 lbs. to the square inch. At best it is insufficient, and ceases the moment the small quantity of carbonic acid capable of being carried is consumed. Any mischance calling for prolonged action of the propeller will exhaust the motive power, hence the craft will be useless in such a case, and inevitably lost, no means having been devised for bringing it back.

"6. The motive power of the submarine torpedo, atmospheric air under moderate pressure, is safe and reliable. It acts with undiminished energy during any desirable length of time, being supplied by stationary engine power; hence any occurrence calling for prolonged action of the propellers will occasion no embarrassment. Should the enemy avoid contact by manoeuvring or retreat, the torpedo, will be brought back by turning the reel, an operation effected also by engine power. During contest, a rapid retrograde movement (impossible with the torpedo boat) may be effected whenever requisite, simply by putting the reel in motion as stated.

"7. The means adopted to start, stop, and steer the torpedo boat involves mechanism of an unusually complex and delicate nature. Two insulated wires are required connected with a galvanic battery on shore and coiled round a reel on board of the boat. The electric currents, are regulated by a dial plate and keys, the handling of which requires experience and the strictest attention on the part of the operator who, unable to watch the course of the torpedo boat himself, must follow the instructions received from another person. Three motors are necessary to put the propeller in motion, viz., (1) A small magnetic motor to open a valve admitting carbonic acid gas into (2) a small engine, the power of whose pistons opens a valve for admitting gas into (3) the main propeller engine. The steering is effected by two separate pistons operated also by the carbonic acid gas admitted by valves moved by galvanic agency. The pistons last mentioned put the helm