

in the profession already, said the Hon. Commissioner of Crown Lands, and out of over 200 land surveyors in the Province there are about 60 to 70 who are absolutely without work except for small country jobs such as brought them little or nothing. He had had opportunity for seeing this since he had been Minister of Crown Lands, and he could say that if he had granted all the requests for work addressed to him both by surveyors and by members of the House, he would have had to give orders for work to the extent of about \$100,000 a year.

This bill has been read a third time and passed. This bill was promoted by the Royal Military College Club, who have obtained similar concessions in the Province of Ontario, from the Law Society, from the Royal College of Physicians and Surgeons, and from the Government of Ontario in regard to Provincial Land Surveyors. All these concessions have been obtained by the Club, without the slightest aid or assistance, either from the Royal Military College or the Department of Militia and Defence.

The Club is fortunate in possessing such an indefatigable Honorary Secretary as Captain Ernest F. Wurtzle, who, residing in Quebec, has been able to get this bill, placing graduates of the College on a par with the graduates of Universities in the Province of Quebec, passed by both Houses, and now but awaits the Royal assent. As the Province of Quebec has now followed Ontario in this respect, no doubt the other provinces will, ere long, follow the lead of the two principal provinces of Canada.

## MACHINE GUNS AND THE VOLUNTEERS.

Lieut. A. L. Morant in the United Service Gazette.

Twenty-three years ago the French mitrailleuse was an object of wonder and perhaps alarm to the military authorities of Europe. It was, as is the wont of the French with a new invention of a warlike character, carefully guarded and worked only by sworn men, so particular were they that the secret of this deadly machine should not leak out. The weapon itself being entirely unknown in war, could only be given a purely theoretical place in tactics, as it was similar to no other arm, except in some respects to the artillery. Accordingly, it was settled that it should be equipped, handled, and organized in batteries. All persons who were privileged to know a little of its working were convinced that the use of mitrailleuses in war would produce far-reaching and indeed revolutionary results. It was represented that artillery could not be served under the hail of bullets with which they would be overwhelmed, and infantry could not persevere with a frontal attack in view of the shocking losses they must sustain. Alas, for these theorists, in all these respects they signally failed to sustain the parts allotted to them, and during the opening actions of the war of 1870-1 they not only proved useless when pitted against field guns, but it was found that they had absolutely no effect upon infantry in extended order. Their range was infinitely inferior to that

of artillery, and their inaccuracy of fire at long ranges was very serious, while the well-served Prussian batteries destroyed their crews and limbers in a few minutes. The twenty-five barrels radiating from a common centre were not susceptible of a lateral dispersion of their fire, since the rigidity of their construction prevented any accurate aim except at an object right ahead. The immovability of the barrels caused an undesirable concentration of their fire, causing little damage to be done except against troops in close order. Men who came in their line of fire were sometimes riddled with balls, and a Prussian officer is mentioned as having received 22 shots on one occasion.

The American Dr. Gatling produced a similar weapon, which has been adopted into our service. It has accompanied our troops into most of their "little wars," and has acquired a somewhat indifferent reputation. This is due to their tendency to jam at critical moments, as during the attack on the Italian expeditionary force at Dongali in Abyssinia. One of the officers of the expedition, who was the sole survivor, relates in a contribution to *La France Militaire*, that on the approach of the blacks, he and another officer took charge of a Gatling piece, but that they refused to act for some time. When at last they were induced to work they created some considerable havoc; however, after a few rounds they again jammed, and the final rush then taking place, the Italians were massacred to a man. During the recent assault on the little hill-fort of Milt in Kashmir, an eye-witness states, that on this occasion "as is the habit of this weapon when carried on service it frequently jammed." Jamming is due to three causes:—(1) defect in cartridge case, (2) miss-fire cartridge, (3) an imperfect extractor. All machine guns, except perhaps the Maxim, are liable to jam, and the serious nature of this defect may be imagined when we read that in the charge of the dervishers during the battle of Abu Klea (17th Jan., 1885), the jamming of the Gardner guns was attended by "the loss of half the Naval Brigade."

The Gardner gun has the axes of its barrels parallel to one another in a horizontal plane, and is in use principally in the Naval service. The terrible fire of these guns enabled Lord Charles Beresford, during the Gordon rescue expedition, to steam past the fort of Wad Harbashi on the Nile in safety. In this redoubt the Mahdi's gunners were serving some field guns, and the navigable channel being only 80 yards wide, the Safieh ran a considerable risk of being sunk. He, however, opened fire on the embrasures, silencing the guns, which were only able to re-open fire when the vessel had reached a point where the Gardners could no longer work. A later weapon still is the Maxim gun, which has one barrel covered with a water envelope, which in case of rapid fire cools the barrel. Fire with this gun is necessarily more accurate, as the difficulty arising from the axes of the barrels not being exactly accurate does not occur. It is easily handled by one man as against four needed for the Gardner, and a constant stream of bullets can be sustained by the gunner holding back the trigger. It

is also feasible without deranging the aim to spread the discharge over a considerable extent of the enemy's line. Jamming cannot affect its action, as by turning a crank the cartridge will drop out.

From the short summary given above, it would seem that the Maxim gun is the one most suited to Volunteers, both for its simplicity (as it can be cleaned in the field by unskilled men) and for its great accuracy of fire. Experiments with a Maxim gun, firing a .450 cartridge, were carried out last year at Bisby by the cyclist detachment of the 3rd V. B. Royal West Kent, mounted on a cycle, being drawn by two men. The most interesting experiment was that in indirect firing, in which the gun and its crew were entirely hidden from an imaginary foe. The gun was laid on a point aligned in the proper direction, and the results were observed by officers with field-glasses on either flank. The enemy represented by the usual canvas targets were 1-200 yards off, the range being afterwards accurately determined. The report does not state the proportion of hits to rounds fired, which were at the rate of 650 a minute, but the clouds of dust at the butts clearly showed the destruction such fire would cause whether by direct hits or ricochets. Yet the markers were unable to see the gun, as the crest of the hill before them was eight feet above the gun's muzzle.

Such a weapon would prove of great value in the hands of an experienced gunner, and the Infantry drill-book of 1893 recognises their utility in an ample manner. The drill-book of 1889 in its standard details of the advanced guards of divisions, brigades, and other bodies (absent from the present book), includes, in each case, a machine gun, which is attached to the mounted Infantry; "for no country is so close and intersected that a proportion of mounted troops and machine guns are not indispensable with an advanced guard." In holding defiles and important positions the machine gun demonstrates its great practical value, for it can go wherever Infantry can climb, for it is the auxiliary of this arm in particular. On service the Infantry drill determines that guns attached to units for administrative purposes are to be placed under officers commanding the force to which the units belong. They will be employed under his directions. It is, however, doubtful if machine guns can be advantageously employed in an attack of a position, except as a protection against flank attacks; it is when the position is assaulted by the second line that their real value is shown, in preventing beaten troops rallying. They should therefore accompany the second line. To mass these guns in batteries is universally admitted to be suicidal, as they can serve no possible purpose, than to present a good mark to the enemy's artillery, by whom they would be crushed. For this reason they may not be employed in greater numbers than two together.

In the defence they should be of great use in defending roads running through the position, in defending strong fortified houses, etc., in advance of the line, and in guarding a somewhat exposed flank. Where