

in war, have reduced the interval between guns to fifteen (in some cases even to six) paces, but without diminishing battery or brigade division intervals, which they consider necessary for the preservation of fire discipline. In place of *echelons*, which obviously take up a large extent of ground in proportion to the number of batteries, they propose to use successive lines or tiers of guns, and thus to crowd such ground as is available for Artillery with the greatest possible number of weapons. Both of the above changes are entirely dependent for their inception, as they will be for their advantage, upon the fact that the new powder has no smoke which may hide the enemy.

The Germans have added two waggons and the French three to the establishment of each battery. Omitting the increased storage due to an improved pattern of waggon, we may thus say that the former have added 33 per cent., and the latter 50 per cent., to their former equipment in ammunition. The Russians have gone even farther, and have now twelve waggons to the battery, exclusive of forge, store waggons, etc.

The accuracy and volume of modern fire, both of artillery and infantry, has led at various times to different suggestions, having for their object the protection of guns by some species of armour. These have, up to the present, been rejected in practice, owing to the unavoidable increase of weight which would be the consequence of the adoption of such a form of protection.

The Gruson travelling shielded mounting, which was tried at the German manœuvres of 1889, and which was also exhibited to a gathering of officers of all nations in September last at Magdeburg, consists of a sheet-iron cylinder, which is provided with a floor and a revolving curved roof, and has a door at the rear. The weight of the gun (which is without recoil) and that of the roof are taken on a central column, and do not fall upon the thin iron sides. The system rests on four small rollers, which are used to place the mounting in position, while the transport of the whole is rendered comparatively easy by the use of a transporting axle, carrying two wheels. It is considered that the whole can be drawn by three horses, which are driven by a driver sitting on the cupola itself. These mountings might be employed in defensive positions, in cases where such positions were decided on some time in advance of the struggle and deliberately prepared for a stubborn defence, but their true vocation is in the defence of fortresses, for which they are sufficiently mobile and in which, if armed with machine-guns, they might be of considerable use.

I have now, as far as the time at our disposal will admit, brought before you the present general position of the material of field artillery. The various directions in which progress appears to be about to take place may be summed up as follows:—the universal use of smokeless powder, the use of high explosives for shells, the increase of the length, and therefore of the capacity of shells, the employment of field howitzers or mortars, increase of the muzzle velocity of guns and the increase of the amount of ammunition carried.

According to the division of class of 1889, the first which has been raised under the new military law in France, the forces of the republic since the first of 1890 have been as follows; The active army and its reserves, 1,510,290; territorial army, 994,615; reserve of territorial army, 1,266,290; officers, 25,000; gendarmes, officers and troop, 27,000. This will give the French republic, in case of war, 4,000,000 of men. Heretofore the relation of the effective army, according to the number of inhabitants in each nation, has been about 1 per cent. in time of peace and 2 per cent. in time of war. To-day the per cent. will be five times this at the moment of mobilization. At no period in her history has France had an assemblage of military forces to compare with this.

NIAGARA BATTLE-FIELDS OF 1812-14.

Fully one thousand invitations to attend the lecture delivered by Capt. Cruikshank last week were issued by the Canadian Military Institute, and if the weather had not been so intensely disagreeable it is probable that Convocation Hall at Upper Canada College would have been completely filled. Even under the decidedly unfavourable circumstances there were few vacant seats, and those who attended were rewarded by the acquirement of knowledge respecting a most important and interesting period in the history of their country which might not have been obtained but for the efforts of the lecturer, who made it a subject of special study and research. Capt. Cruikshank lectured on "The Battle-fields of the Niagara Peninsula, 1812-14," forming a chapter of Canadian history of which the information obtained through ordinary channels is comparatively meagre. Not only had the lecturer sought to qualify himself for the task by securing access to British and Canadian records, but he had possessed himself during a residence at Washington of the American view of the campaign. No wonder, then, that his lecture was anticipated with pleasure, and that it was listened to with profound attention.

In the audience were many well-known private citizens and many ladies, and, as was to be expected, a large number of local military men were present. Among those observed were Lieut.-Col. Otter, D.A.G.; Lieut.-Col. and Miss Dawson, Lieut.-Col. G. T. Denison, Lieut.-Col. and Mrs. Jones, Dufferin Rifles; Lieut.-Col. Rogers, 40th Batt.; Lieut.-Col. and Mrs. Shaw, Major Vidal, Major Mason, Major Harrison, Major Mead, Major McSpadden, Major J. Mason, 13th Batt.; Capt. Mason, Capt. McGee, Capt. McLean, Capt. J. Hughes, England; Capt. J. Stuart, 13th Batt.; Capt. Mutton, Capt. Milloy, 19th Batt.; Capt. Manley, Capt. Charles and Mrs. McDougall, Capt. Stinson, Capt. J. G. Ridout, Lieut. Evans, Lieut. Laurie, Lieut. Crean, Lieut. and Mrs. L. H. Irving, Lieut. Fleming and Lieut. Denison, G.G.B.G.; Lieut. Mickle, Lieut. W. Irving, T.F.B.; Lieut. & Miss Fahey, Surgeon-Major Keefer, late Bengal Army; Sergt.-Major Cumming and Sergts. C Company, I.S.C.; Sergt.-Major Cox and Sergts. R.G.; Sergt. Major Kennedy and Sergts. Q.O.R.; Quarter-Master Sergeant Borland, I.S.C. Among the civilians were:—Principal and Mrs. Dickson, Dr. Scadding, the President and members of Canadian Institute, Mr. Chas. Mair, Mr. and Mrs. S. Jarvis, Mr. D. B. Read, Mrs. Curzon, Mr. and Mrs. Wm. Webb, Mr. and Mrs. T. Brough, Mr. and Mrs. A.E. Jarvis, Mr. Mortland, Professor Baker, Mr. and Mrs. W. Baines.

Letters expressing their regrets at being unable to be present were received from His Excellency Lord Stanley of Preston, Major the Honourable C. W. Colville, Major-Genl. Herbert, Rev. Canon Bull, Drummondville, President of Lundy's Lane and Wentworth Historical Societies.

Hon. John Beverley Robinson occupied the chair, and after an address, which was both interesting and instructive, introduced the lecturer.

Capt. Cruikshank received a warm welcome. He explained that in a lecture of an hour and a half's length at most he had to try and cover a period extending over 20 months. His object, it was readily discernible, was to show that the defence of the frontier against the American forces in the war of 1812-14 was maintained almost entirely by the Canadians. He attempted little argument or reasoning, but gave facts and figures to prove his contention. It is impossible, under present circumstances, to attempt even a condensation of his admirable paper, but as a chief point made by him was the wretched condition and insufficiency of the royal troops stationed in Canada at the outbreak of the war, his statements with respect to them are herewith given. It was his purpose, he said, to deal with the military aspects of the subject, and he would exclude all details which had not any direct bearing on it from that point of