this question up, we ask what is the best course to pursue to put M. R. A. affairs right? Our opponents know that we have not been unduly harsh in dealing with the matter. We have striven to be fair; we have tried to be kind and courteous under strong convictions; we have the very best interests of rifle shooting at heart; but we feel it a duty, an imperative demand, that the Manitoba Rifle Association shall be what it pretends to be. We leave the subject to the consideration of all interested, trusting that every member will be present at the annual meeting, held early in March; that some course should be adopted by all; that the past should be blotted out by a sweeping reform. And it must be so or the association will linger and die. Let every member aim to be true to the principles and constitution of the M R. A. and good results will follow. I have spoken.

BUCKSHOT.

FIELD ARTILLERY MATERIAL.

(United Service Gazette.)

Lieut.-Colonel L. W. Walford, R. A., on Thursday last delivered at the Royal United Service Institution a very able and critical lecture on "The Development of Field Artillery Material." General J. T. Walker, C. B., R. E., presided. The attendance was much smaller than usual.

The lecturer observed that there are certain signs which point to the possible adoption, in imitation of the Infantry rifle, of a small calibre, a shell of great length, and a high muzzle velocity. The use of a small calibre will necessarily entail the employment of a shell of small section, while in order to resist the action of the pressure needed to generate a high velocity the shell must, even if it be made of forged steel, be of considerable strength, and, therefore, of a certain thickness. Such a shell will, even though it be made of great length (say 6 calibres), have but a comparatively small content, either of bursting charge or bullets; as regards common shell, this defect may perhaps be made good by the use of a high explosive, but with respect to shrapnel it cannot be surmounted. The use of a long shell is intended to supply the necessary space for the burster or the bullets and to ensure a high remaining velocity. On the other hand, its employment necessitates the use of a rapid twist of rifling, and will probably affect injuriously the accuracy and the length of life of the gun. The high muzzle velocity will be needed to give the requisite rotation (without an excessive slope of rifling) to the long projectile, and is further desired by some officers for its own sake. As regards quick-firing guns, the rate of fire of Artillery in the field is governed by the time required to run up and lay a gun, together with that necessary for bringing up the ammunition; the operations of opening and closing the breech, and of putting in the shot and cartridge, can be performed as quickly as is needed with any breech-loading gun. It may be said, therefore, that, with respect to rapidity of firing, no advantage would be gained by the introduction of quick-firing guns for Field Artillery, except with regard to the fire of case.

There is a tendency in almost all European armies to revert to the employment of field howitzers or mortars, throwing a heavy short shell with a low velocity. This type of field gun has of late years been abandoned, except in the case of our heavy Field batteries in India, but there is now a very marked movement, led by Russia, in favour of its re-introduction. The advantage of possessing a howitzer which will throw a heavy shell is undeniable, but there must be some hesitation in accepting a weapon of which two projectiles weigh more than a cwt. as the arm of a field (therefore, presumably, mobile) battery.

The question of uniformity of calibre, which simplifies manufacture in peace, and the supply of ammunition in war, has, up to the present time, been practically tried by Germany alone, but there are not wanting signs to show that this problem will be seriously considered by other nations when the time arrives for the re-armament of their Artillery.

The carriages of the Artillery have been made, of late years, both lighter and stronger by the employment of steel. Owing to the increased muzzle velocity of field guns, it has been found necessary to use special means to check the recoil, either by nave brakes, such as the Grusson, and that on the 12-pounder carriage, Mark I., or by tire brakes, such as the Lemoine, the German service, the Buffington, and that on the 12-pounder carriage, Mark II. Owing to the exceptionally high muzzle velocity of our 12-pounder, we have, up to the present, paid more attention than other nations to the construction and use of these buffers, as applied to field guns, but any re-construction of material will certainly be accompanied by their more general use.

Omitting case-shot, which is the same in all armies. and the new variety of shell with a high explosive, the typical field projectiles are a shell for ranging, generally called common shell, and a man-killing shell, or shrapnel. As to the former of these, we use a forged steel shell containing 2 lbs. of powder, the Germans have a cast iron ring shell with a bursting charge of 6 oz., while the French employ their shrapnel shell (which holds only 2 oz. of powder) for the purpose of ranging. As to shrapnel, the French and ourselves place the burster in the head of the shell, which is contrary to the practice of other nations, who all use a burster in the base, connected with the fuze by means of a tube which passes down the centre of the shell. High explosives have been adopted for the bursting charges of field common shell by both the French and the Germans, and trials have been made in the same direction by other nations. The French shell is a steel common shell, four calibres (as an experiment even six) in length, filled with cresylite, of which it holds 3 lbs.; it is used with a percussion fuze, and is intended to destroy cover, such as earthworks, walls, &c. A ninth waggon has been added to each heavy battery for the purpose of carrying seventy-five of these projectiles. The German shells which replace a portion of the complement of powder shell are of the same weight as the ring shell (15·8 l s.), and are filled and wet gun-cotton primer; they are intended to be used as a rule with a time-fuze against men.

Should it be found, after the experience of some years under varying circumstances, that smokeless powder is as trustworthy as gunpowder (which is, as we know, by no means unaffected by heat and damp), the great technical advantages to be derived from its use would be sufficient, even if we disregarded the tactical benefits, to ensure its adoption, in some form or other, in every Army in the world. It is at present, however, almost everywhere upon its trial, and has been as yet definitely adopted for Field Artillery by France alone of all the Continental Powers. As to the tactical effects of the introduction of smokeless powder, the attribute of invisibility has been somewhat over estimated, both as regards its extent and its effect. The discharge of the gun is accompanied by a very vivid flash (closely resembling the flash of a heliograph), and this flash it will be difficult to conceal in the case of guns which are laid over the sights. The amount and the great velocity of the gas which issues from the muzzle throws up from any ground which is at all loose or sandy (and almost all ground will tend to become loose when the guns have been fired a few times) a cloud of dust, which, though it is equal neither in volume nor density to the smoke of gunpowder, will yet offer a mark sufficient to show the position of the battery. The absence of smoke will certainly assist materially the practice of the battery, inasmuch as not only will the observation of fire be easier, but there need be no delay in laying, since the target will be always visible.

The Germans, realizing how difficult it will be to find space for the masses of Artillery which they propose to use