

CANADIAN-MADE SNIDER CARTRIDGES.

I have not had a visit from Smith for some time, but he has on several occasions written, enquiring as to the price for hay in the Ottawa market, and what are the chances of getting rid of a lot of pork before the thaw sets in; and yesterday I received the following screed from him, which I send to you, to publish or not:—

KAZABAZUA, 12th March, 1886.

DEAR FRIEND—I haven't seen you since I was last in town, somewhere early in February, when I came in rather hot over what the *Rifle* said about me, but I have simmered down since then. The other day I had an hour to spare, and spent it in oiling the old "gas-pipe," and that led me to wondering what kind of cartridges I am to shoot with this year. Colonel John wrote me last fall that he had no more of mark IX, and that I would have to take D.C. make. I saw enough and heard enough about D. C. last year to make me rather skeery of using it, because of its uncertainty, both as regards extraction and as regards results on the target.

I have been told that the militia authorities have acknowledged that the ammunition made in the Quebec factory is—or was—faulty, and that a new shell, called the "coiled case," (see Captain Wurtele's article on a Snider cartridge) had been devised, which was a very much stronger shell than the paper-covered one in use. This is a step in the right direction, and will ensure perfect extraction.

When I was home in 1884 with Col. Ross, on the Wimbledon team, I visited Woolwich and saw cartridges made, and—being inquisitive—I learned it was supposed that 70 grains of powder, R. F. G., I think they called it, were placed in each shell, but as the machine they used was not a very accurate affair, a margin of *two* grains over, or *two* grains under 70 grains was allowed, and that a cartridge filled with 68 grains or 72 grains would pass inspection. I told the people there that four grains was too much of a margin, and was the cause of erratic, if not bad, shooting, and got laughed at. Captain Wurtele tells us that this four grain limit is allowed at the Quebec factory; then no wonder we have had erratic shooting. That the machine for filling shells in use at Quebec, which is a different affair from that at Woolwich, does not give equal results, I give the following results of weighing the powder found in ten rounds of D. C. ammunition to prove:—

1—70.65 grains.	6—69.45 grains.
2—69.88 "	7—68.93 "
3—68.88 "	8—68.18 "
4—68.52 "	9—69.11 "
5—69.46 "	10—70.99 "

The difference between the lowest and the highest is 2.81 grains, which is too much, as it is known that the difference of *a grain* of powder makes a difference of 10 feet in muzzle velocity, and therefore a difference of 2.81 grains is equal to 28.10 feet, which is sufficient to put a man anywhere on the target, and just where he does not want to go. What is wanted, is a machine that will ensure a variation not exceeding *one* grain, and such can be made. At the meeting of the National Rifle Association in London on the 23rd ult., Mr. C. F. Lowe stated that some years before he drew attention "to the fact that there was a serious difference in the amount of powder forming the charges of the cartridges—this difference sometimes amounting to *six* grains. A skilled engineer having expressed an opinion that it would be a simple matter to devise a machine (on the same principle as the automatic machine at the Bank of England for weighing sovereigns) by means of which the amount of powder in each cartridge could be ascertained with an absolute amount of certainty, instead of there being a variation of so many grains, and at the same time this machine would effect a considerable economy by the substitution of mechanical for hand labor. A suggestion has been placed before the military authorities to re-model the entire system of cartridge manufacture at Woolwich, and the whole question was now under consideration. Shooting men might therefore live in hopes of having better ammunition in the future than they had had in the past."

I have heard that a board had been appointed to examine into and report on the working, etc., of the cartridge factory at Quebec, and though it does not appear that their report has seen the light, I trust it will contain something on this most important point.

Besides this variation in the weight of the powder charge, there is another reason for the uncertainty of D. C. ammunition, and that is the *grain* of the powder. At Woolwich I was told that the whole of the powder (R. F. G.) must pass through the 12 mesh sieve, and that out of 16 parts, 12 should be retained on the 16 mesh sieve, and not less than three parts remain on the 20 mesh sieve, and *one* part might be allowed to pass through it. Now this one-sixteenth part is equal to $6\frac{1}{16}$ per cent. or $4\frac{375}{1000}$ grains in the quantity contained in a cartridge, supposing it to contain the full quantity of 70 grains.

To show the difference between the grain of the powder used at the factory and the above standard, I am able to give—as follows—the results of a careful sieving of the charges of powder whose weights I have already given, and I might here state that both the weighing and sifting were done by experienced hands and with accurate apparatus.

No. of Cartridge.	Quantity which passed thro' 20-mesh sieve	Quantity which passed thro' 12-mesh sieve	Quantity which failed to pass through 12 mesh sieve.	Total Weight
	Grains.	Grains.	Grains.	Grains.
1	30.4184	32.2549	7.0788	70.6521
2	20.3715	35.6502	13.8588	69.8805
3	16.2355	41.3604	11.2815	68.8774
4	16.1724	41.2832	11.1117	68.5223
5	16.6676	38.5186	15.2786	68.4638
6	23.6124	31.9463	13.8897	69.4484
7	19.5999	36.6070	12.7322	68.9391
8	21.4579	34.1069	12.6241	68.1829
9	18.0257	33.9526	17.1306	69.1089
10	19.1852	34.8631	16.9454	70.9937

This table shows that the quantity of "fine grain" ranges from $32\frac{1}{2}$ to 43 per cent., instead of being $6\frac{1}{4}$ per cent.; that "coarse grain"—which should not be present—ranges from $11\frac{1}{10}$ to $21\frac{5}{10}$ per cent., and the "properly grained" powder ranges from 46 to 60 per cent., instead of the standard quantity of $93\frac{3}{4}$ per cent.

"Fine grain" powder is quick of combustion and therefore sudden in its action, and the bursting of shells in the rifle, and the erratic shooting may be thus accounted for. What the Canadian rifleman wants is a cartridge in which he can trust as implicitly as he does in mark IX, and unless he gets it, target practice in Canada, so far as the Snider is concerned, will come to an end. Yours sincerely, J. SMITH.

I have but a few words to say. Some time since it was stated in the public press that Lieut. Hearn, of the Cartridge Factory, Quebec, had been sent to Woolwich to go through a "Cartridge Course." It is to be hoped that he will avail himself of the opportunity thus afforded, and make himself acquainted with the apparatus spoken of by Mr. Lowe, and any changes which may be inaugurated at Woolwich; and further that, after his return, he will be permitted to make a study of the *modus operandi* in the great cartridge factories in the United States. SMITH'S FRIEND.

COMMON SENSE ON PARADE, OR DRILL WITHOUT STAYS.

BY LT.-COLONEL THE RIGHT HON. J. H. A. MACDONALD, C.B., M.P.

(Commandant the Queen's Edinburgh R. V. Brigade.)

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Such, then, being some of the most important conditions of modern warfare as regards infantry, the next question for consideration is, what points would a prudent man aim at so as to meet these altered conditions? If a system of infantry manœuvres were to be devised, what matters would the person entrusted with the duty keep prominently before him? Briefly summed up they are these:

In contrast to battles of olden times, Infantry troops will be called on for a severe and concentrated strain on the physical powers. They will have to cross a full mile-and-a-half, or even two miles, at a high speed when in motion, in order to force a decision. Therefore, he would put down as a *sine qua non* that they should be freed from all cumbrous and roundabout movement in moving to and forming up at the place from which the actual advance in fighting order was to be made; and, further, that during the advance the mode adopted should not cause any unnecessary fatigue, however slight. As cognate to this, he would desire to eliminate everything that might tend to produce "worry" and unnecessary delay and exposure during the fight. He would seek that the mode of action should be the same from first to last, and control and guidance limited to directing the men within that mode. He would reject anything that required change of character of manœuvre within the zone of fire. He would strive after a thorough maintenance of connectedness throughout the different parts of the force, so that the whole should work towards the one end, being closely linked together to the prevention of all preventable confusion. A paramount aim would be to keep up an efficient control, so that no part of the force should get out of hand, and that orders might permeate to every point below promptly.

He would desiderate a means of rapidly giving local support where it might be required—a feeding, reinforcing support, as distinguished from a relieving body, or a reserve.

He would demand that the mode of reinforcement should bring support in ammunition as well as in men at all points.