

are engaged. But then the object which is proposed is no longer attained, viz., the avoiding bringing subdivisions in close order within the zone where the enemy's bullets will have full effect, whilst it is then necessary that a support in compact order the third subdivision of the company, must take up a position behind the line of skirmishers thus reinforced. Moreover, it is doubtful if, with a trajectory as flat as that of the arms now in use, a second line of skirmishers marching one hundred and fifty paces in rear of the one in front of it, would not suffer in most cases just as severely as a support formed into column of sections and skilfully handled. Besides this we must call attention to this fact, that in will be extremely difficult for young soldiers as soon as the first line shall have become engaged in firing, to abstain from firing in the second line, which would certainly cause no slight confusion in the former.

"The practice of doubling the lines of attack appears to us in every case a necessary measure. It is a thing which is so often inevitable in war that soldiers ought to be invariably accustomed to it in peace time. It must be practiced on the *champ de manœuvres*, as we have already so often advocated, and upon a much larger scale than has hitherto been the case, having in view, at the same time, the end of habituating the soldier to obey other officers than his own immediate ones. It was in this that we were so often wanting in the great battles of 1870-71. The cause which made it frequently so difficult to handle the groups of skirmishers mixed up with one another may be attributed to the troops failing to obey officers not immediately their own.

"We say frankly, that to obtain this result is of more importance than the practice of all the new formations. It is self evident that when the fight begins to assume a serious aspect it is necessary to keep the men as much as possible under the orders of their immediate commanding officers, for mixing them is never anything but a *pis aller*, even when it becomes inevitable.

"As far as we can make out, the motives which have governed the introduction of the new formations, recommended as the essential for the fighting of skirmishers in the open the suddenly throwing forward strong swarms of skirmishers whilst in broken ground the skirmishing is confined to groups.

"With regard to this subject, we shall add remarks worthy of consideration in a work recently published by the Bavarian Captain von Hoffman—'The Storm as a Formation for Fighting.' Advancing in large numbers is a most admirable manoeuvre; on the drillground, advancing to attack with the bayonet at the double may be practically carried out. However, with regard to what actually takes place in war, it must be remarked that very often the attack at the double could not take place, owing to the exhaustion of the men, or because the standing crops would render it simply impossible; consequently, subdivisions in close order and lines of skirmishers should continue to practise advancing at the ordinary pace.

"The subdivisions forming the support follow in close column of sections. This formation has all the disadvantages of the second line of skirmishers, and none of its questionable advantages. The officers losses the direction of subdivision without finding an equivalent. One section is nothing in close column. The personnel of our non-commissioned officers is not qualified to di-

rect or keep up a subdivision thus split up into small fragments. The effect of artillery would—according to the officers of that arm—be more destructive, most probably because these groups, scattered over the battle-field, would present such a number of targets that the splinters from every shell would take effect.

"With regard to breaking the company of support up into subdivisions, at the moment when the line of skirmishers attacks, it is a manoeuvre proportionately liable to the same disadvantages, and which does not give for a bayonet attack a sufficient breadth of front.

"Supports formed by one of the flanks. There is no doubt that this formation presents advantages against a fire coming from the front; on the other hand, however, an oblique fire would be so much the more dangerous.

"If a small front is presented to artillery fire, it can be compensated by taking advantage of the depth. In admitting, however, that the losses are really smaller, this little advantage is largely made up by other and greater disadvantages. The subdivision marching by one of the flanks is never ready to fight at any moment, it must first form line, and this often takes up too much time. The influence of the commanding officer is diminished; marching at the head of this long string of men, he is no longer seen by them, and reciprocally, he can no longer have them in hand as before. Weakness and cowardice will have greater opportunities for exhibiting themselves. A subdivision formed in line or in column of sections, we recommend heartily: this latter formation obtains cover easier owing to inequalities in the ground, than a subdivision formed up to a flank. For finally, in examining all these propositions, we must not think of looking upon flat ground in the light of a level floor. How often would one have to traverse a space perfectly level in advancing to an attack? One would be wise in every case to avoid it as much as possible. And how often is it not the case, that ground, which appeared as flat as the hand before one came up to it, was found to be intersected with very sensible depressions when one had got on it."

During the artillery experiment at Calais, under the direction of Colonel de Montluisant, other experiments of the same kind are to be commenced at Fribes under the orders of General Aubac. Colonel de Reffyo is sent to this locality by the President of the Republic to take part in these trials in which the experiments of Trouville will be renewed. Finally, a special experiment commission, ordered at Bourges, will commence operations on the 1st January. These comparative trials carried on at three separate places in France will be continued till the spring. By that time, the *Paris* says, all the elements necessary to enable a definitive judgment to be come to in regard to the gun of the future will have been obtained.

The *Berliner Tageblatt* states that the Danish Minister of Marine and War, Herr Haffner, has tendered his resignation, and that Colonel Thomson will be entrusted with his portfolio. The official paper denies the change to be of any political importance. It has, notwithstanding, caused considerable sensation, as a new bill upon army organization is shortly expected to be brought into the Diet.

RUSSIAN ARTILLERY AT THE MOSCOW EXHIBITION.

The *Invalide Russe* has inserted in its columns a series of most interesting articles on the different groups now being exhibited in the military section of the Moscow Exhibition, and we propose, with the aid of our well-known French contemporary, the *Revue Militaire de l'Etranger*, to give an account of that formed by the Artillery.

For several years Russia has made enormous sacrifices in favor of her military establishments, and more especially for those of the Artillery. The founderies, manufactories of arms and of gunpowder have been greatly deployed. The object proposed by the organizers of the exhibition was to show the successive progress made by the national industry, and to exhibit the actual process employed in the manufacture. Consequently a large part had to be reserved for the manufactures of the State in which one can follow step by step the progress accomplished by science, and which in consequence may serve as models for private industry.

The Artillery exhibition comprises two distinct portions—the one, an actual museum of arms, shows the state of the armament at different epochs up to the present day; the second, exclusively reserved for the various Government establishments, enables the visitor to follow in all their various details the different manufactures. The arms are divided into three classes, guns, small arms and side arms. This classification renders the study of each of the divisions easier, and a slight attention will be sufficient to enable us to put together in one group the arms which show the state of the armament at any one particular period.

CANNON.—The cannon which appears at this exhibition are arranged in four groups, corresponding to four different periods. The first extends from the commencement of Artillery until the time of Peter the Great;

The second from Peter the Great to Schuvalow;

The third from Schuvalow until the adoption of rifled guns.

The fourth corresponds to the present day.

First period.—This group is of great interest from an historical point of view, for we find in the cannon of this period—though in a very rudimentary form—the method of loading now in use. It appears that the slow progress of industrial advancement has alone prevented inventors from making a practical application of their ideas. The collecting of all these different objects, scattered in every corner of Russia, presented great difficulties. It was necessary to transport these pieces, to study them; and to make out their history recourse was had to the museum of St Petersburg, but it was also necessary to search the archives of certain towns and monasteries. The oldest of these cannon is not of Russian production. It is of iron, and the fifteenth century is fixed as the date of its origin. It was found in 1852 at the bottom of the sea near the coast of Denmark. It is a breech-loader, and rests upon a piece of wood, which serves as the carriage. It is about 1.25 metres in length and its calibre is four inches.

By the side of this piece there is a bronze of calverin of Prussian origin, dating about the end of the fifteenth century. It is a breech-loader, and has no trunnions; its length, without the butt, is 1.87 metres and it throws a two pound ball. This piece may be looked upon as one of the first cast in Russia, and it is attributed to an Italian artist, Aristotle Fioravanti.