

The Maneuver and the Umpire

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In this lecture I have collected the notes that I have made on maneuvers in the last seventeen years, and I have adopted what seemed to be the best experience of others. It has no official authority and is given to the Staff Class as a suggestion in case they happen to be detailed on the important duty of umpire during the approaching maneuvers..

THE MANEUVER AND THE UMPIRE

Lord Rosebury has said: *‘We won our liberties by genius and daring in an inefficient world. Now that one or more nations are keenly striving after efficiency it will not be easy to maintain our heritage; for the inefficient nation must sooner or later go to the wall.’” To this we may add that in the coming struggles of this efficient world the nation will survive which is able to show the best maneuvers in time of peace.

The word maneuver is comparatively a recent addition to our military vocabulary, and when one asks for its meaning he usually receives a wild and indefinite answer. Time and money will be saved, and our objects promoted, by an early decision as to the scope, policy, limitation and object of maneuvers. Unless we do this we may find ourselves teaching lessons which we do not wish to teach and inoculating our soldiers with ideas which we would prefer they should not carry into battle.

THE OBJECT.

Long intervals of peace have developed a new type of soldiers, who are trained entirely in peace but whose efficiency in war is not surpassed by the veterans of many battles. Each year a laborious course of training is closed and wound up by a sort of graduating exercise, or dress rehearsal, in which the soldiers are called upon to show what they know. This exercise is made to resemble war as closely as possible in time of peace and is called a maneuver.

The story of the road to the maneuver ground is another matter. It is probably a correct principle that nothing should be practiced at maneuvers that can just as well be learned at the garrison. Such a rule would eliminate all formal drill, target practice, minor tactics, the marching and the service of security and information of the smaller commands. These duties should engage the time during the months intervening between maneuvers, and are more conveniently studied and practiced in garrison. The methods of this instruction are well understood and may be practiced in posts of small size and limited facilities, This leaves to the maneuver the garrison training on a larger scale, and introduces such problems in the leading of troops as become more difficult with every increase in size of the command.

Until the garrison turns out a finished product, that is until elementary instruction has been learned elsewhere, we cannot expect the large maneuvers to give the best results and we should not be surprised or disheartened at our early efforts.

TWO KINDS OF MANEUVERS.

There are two kinds of maneuvers. In one we try to give a representation of war itself; in the other we show preparation for war.

First. The troops are brought quickly into contact and engage in an action which has been appropriately named "sham battle." It may be made a pure burlesque on the noble game and show bogus war of the worst kind, but with intelligent direction and skilled troops it may be conducted in such a way at least as to do no harm and not unsettle the troops in their well learned lessons.

The origin of this sort of maneuver was far back in history when humanity sought to make a spectacle and a game out of the most serious occupation of

life and it was retained when soldiers began to seek for practical demonstrations of war conditions in time of peace. The sentiment of the troops themselves is in favor of the spectacular element and should be considered. Having worked hard throughout the exercises it is some reward to let them burn powder and get an idea of the character of action which they have prepared. It is everywhere conceded that the spectators also should have some concession made to them. In the foreign maneuvers they are a considerable factor. Many travel long distances and are interested for patriotic reasons as well as on account of relatives and friends who are in the service. Notwithstanding that their presence hampers the orderly progress of events and gives something of a "picnic" variety to the military exercises, these visitors, who often number many thousands, are treated with the greatest patience and courtesy. It is believed that the interest which is usually taken in maneuvers tends to make the army popular and to give the people confidence in it.

A certain proportion of the maneuvers therefore may well be devoted to this character of work, bearing in mind the necessity of not departing too far from realistic conditions.

Second. The troops start at a considerable distance apart and proceed with all the dispositions which would be adopted in actual campaign. During this preliminary stage the advance guards become engaged and many minor actions are fought which require decisions upon questions of hostile contact, and the exercise gradually merges into one of the first class. Finally however, the exercise is closed as soon as the situation has been well developed and a tactical decision, becomes necessary to determine the result.

For purely instructional purposes it is probable that the principal lessons are learned in the move-

ments which precede the final contact of opposing forces. The problems should therefore be devised in such a way that the troops will concentrate their efforts on the preparatory stages of the operations.

Acceptance of this principle will smooth the way of the umpire. Instead of requiring an umpire of exceptional ability and skill in war we will simply need a well instructed officer for that position.

It is impossible to decide the battle itself without making very elaborate calculations and records of losses. Such a decision also must invariably take account of the effect of chance, which can only be decided by a throw of the die. Although we may limit the bounds within which fortune may figure, as in Kriegsspiel, such decisions are never satisfactory to officers or troops, and of course are never comprehended by the latter. In the second class of maneuvers the loss of troops is merely incidental and can be decided in the most general way. It is not necessary to make an actual calculation of loss or to tell off men to represent the dead and wounded. It is far better to avoid such depressing details.

THE UMPIRE.

In the peace maneuver we are able to supply most of the elements that are present in war. We have the ground and the troops representing opposing forces. We can suppose situations such as occur in war, we can issue orders and move troops exactly as we would in actual service. One element alone is lacking and that is the effect of the weapons used. To supply this factor of danger, which by many is considered the most important of all, we introduce the umpire who is a functionary peculiar to the peace maneuver and not present in war. He takes the place of the bullet and the shell, the saber and the bayonet, and by his decision controls the moving incidents of the fight.

Upon such a person much depends. He must be sufficiently well instructed to give a fair judgment on the effect of fire at different ranges. He must be in the confidence of both sides but a partisan of neither. He must steer both sides away from absurdities. His decisions should appeal to the sense and judgment of both combatants. His heart must be closed to many a fair and plausible excuse. Some one has suggested that to have a model maneuver you must have an archangel for an umpire.

The decisions of an umpire are to be obeyed at once; opportunity to discuss decisions will be given at another time. Umpires can enforce their decisions by asserting their right to declare troops or officers out of action.

To aid the umpire the general and special situations are given to him and he should also be assisted by as thorough a study of the ground as possible before the maneuver begins. During operations he is always to be given full information as to ranges, numbers, dispositions and intentions whenever he asks, either in person or through his representatives. He will thus be able to intervene promptly in giving a proper equilibrium to affairs and in deciding where gains and losses of ground shall be made.

A further aid to the umpire and also to the troops themselves is the use of blank ammunition to represent fire action. As both combatants make every effort to conceal their numbers and positions, these matters are only cleared up by fire action. Upon the volume and intensity of fire all questions depend, whether of advance or retreat, victory or defeat. Unless it has some approximation to reality officers will continually blunder into false positions, advance against great odds, maintain themselves too long in untenable positions. It is quite too heavy a strain upon the imagination to expect artillery to fire a shot

or two and infantry to fire a couple of volleys, and expect acceptance of the rule that they have kept it up for hours.

The expenditure of ammunition in modern battle is very great. In the recent Manchurian campaign; some infantry expended ammunition at the rate of 500 rounds per man in a day, and a battery of artillery fired 522 shrapnel per gun in the same time,

The best way to meet the difficulty is to rule that every shot fired in the maneuver shall represent a certain number of those fired in war. Thus if troops are provided with ten rounds of blank ammunition per man at the maneuver, the firing should be distributed in the same way as when the full allowance is carried, and it should be considered that each shot represents fifteen. Under this rule troops of all arms would have to fire continuously in order to maintain their positions or to secure an advantage. The fire of one gun can be considered to represent a battery, or even a battalion; the fire of a company can count for a regiment.

When possible it is advisable to have numerous copies of the map of the maneuver ground made on a small scale. These maps will serve as an additional aid to the umpires, being marked in colors to show the positions of troops and submitted by assistants instead of written reports. They may also take the place of the sketches usually rendered by topographical officers and may be used in making up the final account of the maneuver.

THE CORPS OF UMPIRES AND THEIR ASSISTANTS.

The general direction of the maneuver is in the hands of a chief umpire. He is assisted, according to the size and importance of the maneuver, by assistant umpires, who in turn are assisted by junior officers with orderlies. The junior officers collect information as to numbers, dispositions and intentions of

both sides and report to their chiefs who alone are authorized to give decisions. The assistant umpires also keep in communication with the chief umpire to whom they communicate all important decisions.

The corps of umpires and their assistants ride between the lines, endeavoring to be on hand at decisive points and not disclosing the position of the troops which they are observing. The better practice seems to be to assign them to sections of ground and not to either side and to camp them at the headquarters of the entire command. Artillery and detached commands have special umpires assigned to them. The duty of artillery umpires is to inform the chief umpire, the opposing artillery, the troops within its influence, and the other umpires, of the objective of its fire.

If the Signal Corps is present it should be used by the chief umpire in keeping communication with all parts of the field and in securing rapid decisions. This use for the Signal Corps is probably preferable to assigning it directly to troops in maneuvers of the size conducted in our country, and at the same time it gives every opportunity for the corps to show its special fitness.

In order to preserve a conservative character to the maneuvers and avoid the influence of natural partiality for one's own arm no attempt should be made to assign umpires to duty with their own arms of the service. In this way we usually secure decisions which take account of the point of view of several arms instead of one, and the troops fired on have an equal chance with those who are firing. Almost every officer has a notion of playing his own little game of war and the further he is removed from his particular "fad" the better for the maneuver.

The number of officers on the umpire staff will be determined by the number of troops engaged.. ' A

chief umpire' to direct the entire maneuver and an assistant for each complete brigade would be sufficient, 'These should be assisted by junior officers sufficient to make the umpire staff equal 5 per cent. of the officers engaged. The 'umpire staff and orderlies should wear a white band above the left elbow.

THE USE OF MANEUVERS IN THE EDUCATION OF TROOPS.

Our theory of maneuvers should be based on the idea that we are there teaching our own troops the things that we wish them to remember in battle—in fact we wish to form a habit of the maneuver ground that will not be lost in the presence of danger. On this account we close the action at the point when both sides are ready for the fray and we permit each side to leave with, the impression that it would have won. The umpires are instructed to give their decisions in such a way as not to impair the confidence of troops in themselves. Such an object can never be attained when we make close decisions on questions of victory and defeat.

The tendency of maneuvers is often to teach a habit of timidity which is harmful as instruction and bad for discipline. A man often finds himself "ruled out" at maneuvers for doing the things which would be commendable in war. A cavalry captain once told me with some pride that he had been annihilated four times already and he was getting ready to try it again. Sheridan, Murat, Forrest and Bredow would not have much chance at an ordinary maneuver. The fear of an adverse decision from an umpire in peace is more demoralizing than the fear of his prototype, the bullet, in war. The cavalryman dismounts and waits for something to turn up instead of charging ahead and taking a few chances. The infantryman hunts for cover and waits for his enemy to do something, feeling secure in the supposition that the

umpire will hit the other man, as our friend Private Mulvaney used to remark, "first and frequent." The artilleryman looks for an opportunity for indirect fire and hesitates before taking the 'chance' of losing his guns on the skirmish line, even if that is the best opportunity he has. All this is due partly to the lack of fixed principles in the leading of troops, natural doubt as to the ideas of the umpires and mostly to the exaggerated claims of officers who think that the results of target practice are a fair indication of those to be expected in war. When umpires realize this, they will be able to give a proper turn to the progress of maneuvers.

The soldiers of Frederick the Great lost their efficiency in war through practicing the drill maneuvers of a long peace, and were easily defeated. General Hood complained bitterly that his army had lost its aggressive character through a persistent education in the use of field intrenchments. Military critics have had much to say about the small losses of the British forces in South Africa. May they not have been the result of peace maneuvers which were based upon the theory that the frontal attack can no longer be made in a modern battle? Such instances should inspire us with ideas for a proper policy to be pursued in our own maneuvers.

If peace maneuvers were brought to such a state of perfection that the danger of death could be exactly calculated, they would not be useful in the training of troops. Human nature should be assisted to take the hopeful view that if any one is killed it will be some one else, for only fanatic races welcome death in war.

When troops are "ruled out" they are deprived of whatever benefit is to be derived from the maneuver. Unable to comprehend the fine points of the game they only know that they are humiliated for obeying

the officers whom they have been taught to look up to. It should be the effort of the umpire to intervene in such a way as to prevent troops from getting into positions where annihilating losses would be awarded. In actual warfare such losses are not frequent.

In the education of troops we should only exhibit the fair side of war. We do not show our own troops in defeat or demoralization and we must not take each other prisoners.

The habit of ambushing patrols and small bodies of the represented enemy should be discontinued. It shows a phase of warfare of a low grade and even a misconception of the duty of the force. For instance, a patrol is usually sent out for observation, with orders to avoid the enemy and not to fight. If he concludes to spend his time in bushwhacking an unsuspecting enemy, he is, more often than not, violating his plain duty.

It is no disgrace to retreat and the conduct of such a movement affords a fine opportunity for practice. But in maneuvers all retreats must be in good order.

Opposing troops should not approach within 100 yards of one another. When this is done the advancing troops are ordered to halt by those of the opposite side. While waiting for the decision of an umpire the troops stand at order arms; unless the commanders are able to decide for themselves as to which side should advance or retreat.

When an umpire gives a decision he should take account of the positions of reserves which are near at hand and perhaps ready to go into action.,

BATTLE LOSSES.

One of the greatest difficulties in maneuvers is to repress the tendency to claim greater results for fire than experience justifies. This is partly due to

the results attained at target practice with modern arms, but it comes mostly from the highly colored style in which history is written in order to be interesting. The glamor that surrounds some of the most celebrated battles disappears when we discover that they were feebly contested and that the danger was not great, at least for the victors.

At the battle of Marathon the army of Miltiades, consisting of 10,000 men, fighting, I don't know how long, lost 172 men.

At the battle of Platæa the Greek army of 70,000 fighting all day lost 156 men.

At the battle of Pharsalia between Cæsar and Pompey, which had as great an influence upon the history of the world as any battle that was ever fought, the victorious army of Caesar only lost 200 men, while that of Pompey lost 15,000. The best soldiers in the world were opposed to each other but the fact that the battle was not desperately contested is sufficiently shown by the losses.

Every schoolboy knows the exaggerated style in which these three celebrated battles have been written up. Some of them would not have been more than skirmishes in our civil war.

The most remarkable battle occurred in the fifteenth century at Anghiari in Italy, which was a hand to hand engagement between two armies for four hours, in which only one man was killed and he died from a fall from his horse.

At the battle of Crecy the English army of Edward III with the loss of about 40 defeated the French with a loss of many thousands.

The above were hand to hand conflicts, be it remembered, which are supposed to be more bloody than any other kind.

At the battle of New Orleans an inferior force of Americans under General Andrew Jackson de-

feated a large force of British veterans of the Peninsular war. The American loss was 4 killed and 13 wounded. The British lost 900 killed, 1300 wounded and 500 prisoners.

For desperate fighting no war ever surpassed the American Civil War, so I will give you a couple of instances.

One of the best examples is that of Tuttle's brigade at Shiloh. He was under fire for nearly eight hours, repulsed at least seven separate attacks, in some of which the enemy got to within a few yards and during about two hours he had the concentrated fire of 62 guns upon him at less than 400 yards. His total loss in killed and wounded was 182 out of 1804, about 10 per cent. The loss in one of the regiments which stood its ground from first to last was 27 killed and wounded. The heaviest losses were in the two regiments which tried to escape, and the smallest losses in those which were captured in the position which they had held all day. His men were lying down on an ordinary country road, partly washed out by rain.

At Gettysburg the Federals had 90,000 men on a front of 3 to 4 miles, or ten to fifteen men to the yard. The Confederates with less than 15,000 men attacked the center of the line, across about 1000 yards of open ground. The Confederates pierced the Federal line and probably did not lose more than 10 per cent. in the advance.

In the France-Prussian war at Mars-la-Tour the 3rd German Brigade advanced against a greatly superior force. It took 452 shots to hit one of them. They had no cover to speak of. I do not know the expenditure of artillery ammunition.

In the first action of the France-Prussian war at Saarbrücken about 1,000 Germans, occupying an outpost line, were attacked by more than 10,000 men. They made a good defense and retreated with a loss

of 83 killed, wounded and missing. They fired 12,000 rounds and 127 shells and inflicted about equal loss.

In the same war, at Artenay on October 5, two squadrons of Leib Hussars fought 12 battalions of infantry for about 3 hours as skirmishers at ranges from 100 to 400 paces and lost 2 men and 3 horses slightly wounded, and 1 killed. About 600,000 rounds were fired to get this result. In that war 300 pounds of ammunition were expended for each fatal hit.

At Del Sarak, in the Afghan war, 28,000 rounds were fired and only 50 were killed at ranges below 400 yards.

In the last battle of the Chilian war of 1891, over 1,000,000 shots were fired at short range, but only about 2,000 hits were recorded. The weapon used was the modern small caliber magazine rifle.

In 1876 General Crook's command of 1,500 men at Slim Buttes spent the greater part of an afternoon shooting at a half dozen Indians in a ravine. The loss was 2 or 3 Indians and about the same number of our soldiers.

In the Chino-Japanese war in 1894, at the capture of Kinchow, the Japs expended 90,000 cartridges, 200 shells and 478 shrapnel and killed and wounded 200 Chinese. This was at short range and the character of the resistance is shown by the fact that the Japanese had no killed and only few wounded.

In the Boer war the British losses in their greatest battles were 7.4 per cent. at Magersfontein; 5.8 per cent. at Colenso; 7.2 per cent. at Spion Kop.

It is too soon to say whether the losses in the Russo-Japanese war have been greatly different from those quoted.

THEORETICAL DETERMINATION OF LOSS.

Under the limitations upon the scope of maneuvers which have been proposed there will be little use

for the calculation of the actual effect of fire. It is well to know, however, that it is small in proportion to the results obtained at target practice under ideal conditions.

A comparison of the results of war and peace is most instructive and gives an excellent answer to those who may be disposed to dispute the conservative estimates of an umpire. In our own army experience is limited to the favorable conditions of well constructed rifle ranges over known distances.

Now, take the exact conditions of a company of 100 men, lying down in line at 1 yard interval, firing six shots per minute, at silhouettes similarly disposed at 600 yards. Suppose we get 600 hits as a result, on an ordinary day of target practice.

But take the company out on the march, let a shot be fired, the company forms skirmish line at double time, the target appears in an unexpected place, dressed in khaki, and you open fire at 6 shots per minute. Your results will be greatly reduced and you probably will be lucky to get one twentieth of the former result, or thirty hits.

The comparison of known with unknown conditions is easy to make in time of peace; it is more difficult to compare the latter with conditions in war.

Specially selected officers have been detailed to study this factor in every war since 1864. The result seems to settle on one twentieth—that is, in the case just supposed your thirty hits will be reduced to 1.5.

The company therefore, under the influence of excitement and danger, fires 600 shots and hits an average of a little more than one man per minute, which is a very heavy estimate considering the historical examples above mentioned.

In this way theoretical tables of loss from fire have been constructed which are used in the war game. In this normal case which has just been supposed the following has been given for infantry:

At 100 yards	loss would be	8.00	per cent.	per minute.
" 200 "	" "	6.00	" "	" "
" 300 "	" "	3.50	" "	" "
" 400 "	" "	2.40	" "	" "
" 500 "	" "	2.00	" "	" "
" 600 "	" "	1.60	" "	" "
" 700 "	" "	1.20	" "	" "
" 800 "	" "	1.00	" "	" "
" 900 "	" "	.80	" "	" "
" 1000 "	" "	.62	" "	" "

Or suppose one gun fires eight shots per minute at a company of infantry. The losses inflicted are taken to be as follows:

At 600 yards	4.00	per cent.	per minute.
" 800 "	3.50	" "	" "
" 1000 "	3.00	" "	" "
" 1200 "	2.70	" "	" "
" 1400 "	2.40	" "	" "
" 1600 "	2.00	" "	" "
" 1800 "	1.80	" "	" "
" 2000 "	1.40	" "	" "
" 2200 "	1.20	" "	" "
" 2400 "	1.00	" "	" "
" 2600 "	.90	" "	" "
" 2800 "	.80	" "	" "
" 3000 "	.70	" "	" "

A careful consideration will lead us to the conclusion. that it requires a great number of bullets to hit a man, and that the old rule that it takes his weight in lead was a very good one.

RELATIVE NUMBERS.

In awarding his decisions the umpire will be largely influenced. by the volume of fire and consequently by the relative numbers of the opposing forces. This will greatly simplify his task and he can call history to prove that the god of battles fights with the side that has the most guns.

A glance through recent history will show many cases in which a superiority of less than two to one has been able to overcome genius, patriotism and courage, and even the effect of chance.

In 1814 the allies divided their forces and showed poor -generalship, but with something more than

double forces they drove Napoleon from Chalons to Paris, where he abdicated, although he had been victorious on every field. In 1815 he was beaten in his most brilliant campaign by a superiority of 10 to 6.

With odds in his favor of about the same amount Sherman maneuvered a valiant and skilful adversary from the country between Dalton and Atlanta—a country filled with defensive positions. In the same way Grant was able to force Lee to abandon the offensive and to fall back from the Rapidan to the James.

The recent campaign in Manchuria gives instances where intrenchments were successfully assaulted by troops twice as numerous as the defenders.

THE ACTION OF UMPIRES IN MANEUVERS.

The umpire may intervene at any time. The character of decision given will be one of three:

- 1st. That troops may not advance further.
- 2d. That they must retire.
- 3d. That they are out of action.

First. As all history shows that the greatest losses in battle occur in the retreat after an unsuccessful attack the attempt of peace maneuvers should be to inculcate this principle into them. The umpires should intervene to prevent troops from going so far as to be annihilated or forced to retreat.

Second. Troops may be ordered to give ground. In the case of infantry it would retire in good order at least 500 yards before halting. Cavalry retiring before infantry would move double that distance. The victorious infantry pursues only by fire until the change is made. The umpire will accompany the retreating troops to the new line and will signal “commence firing,” upon which the action will begin anew. Troops ordered to retreat do not necessarily involve others near at hand which were not engaged in the action; After a charge of cavalry against cavalry

the inferior force retires 300 yards and maintains that distance from the pursuers.

Third. Troops are not usually ordered out of the fight except as a matter of discipline. A better form of decision is that troops cannot take the offensive for some time after delivering an attack, suffering heavy losses, or after a long -period of exhausting march up hill or at double time. On the defensive, however, they could still give a good account of themselves.

The umpire must endeavor to be on hand at points where decisive actions are imminent, and must keep constantly informed of the measures taken by both sides. When contact occurs he will base his decision mainly upon the effect of the fire of both sides. He must therefore communicate his observations to the leaders of both sides, so as to be sure that attention is paid to it and that unnatural situations are avoided as much as possible.

Umpires will take account of intrenchments, obstacles and other defensive works only so far as justified by their actual construction. Work may be outlined or indicated only when it is impracticable or inadvisable on account of peace conditions; such are demolitions, barricades and loopholing of walls, etc.

When troops have reached forbidden ground, such as enclosures, gardens and the like, they are permitted to pass around it without disadvantage, and to extend again as if the obstacle had not occurred.

Umpires should have full authority to enforce their decisions and should not defend them to any one except the chief umpire. They give the commands 'Forward,' "Halt," "Cease Firing," and "Commence Firing," whenever necessary.

RULES FOR HOSTILE CONTACT.

It is necessary to prescribe a few rules for the contact of opposing forces.' They must be carefully

selected and should contain only such as it is advisable to give to troops that we are training for war, In a general way these rules should favor the attack, but should be so drawn as to impress the troops with the necessity for taking advantage of cover and of saving their strength.

A target which is not in size at least one-tenth of the range is not favorable.

Enfilade fire is twice as destructive as direct fire.

It is a psychological fact that a man will shoot at a man who is shooting at him, and that he cannot be induced to shoot at anyone else at the same time. Umpires have many opportunities to apply this truth during a maneuver.

A man will face his enemy and will not fire to the right or left oblique; hence lines of battle must be adjusted so that fire will be straight to the front. This has special application in flank attack. Troops under fire may be relied on to move to the front or rear, but not to a flank across the line of fire..

Infantry fire begins to be effective at 1000 yards.

On reaching the zone of infantry fire, the supports are merged into the firing line which here has intervals of one yard. In the further advance as large echelons as possible are used. Under heavy fire the advance is often by file from either flank of a company or battalion thus avoiding a large target for the enemy's fire. The rear men do not rush beyond the leading men but halt on a line with them.

The reserves are advanced as far as cover can be found; where no cover exists they are kept far to the rear. When the first line has been checked the reserves are brought forward in sufficient strength to insure carrying the first line forward. It is supposed that the first line does not retreat, but simply continues its fire until the arrival of the reserves gives it a chance to renew its advance.

Volleys are seldom used, but when fire has been opened it is strong from the first.

Troops in close formation and without cover cannot make short halts at distances under 1000 yards unless the enemy's fire is neutralized.

Lines of skirmishers under 1000 yards cannot make long unbroken advances in the open unless supported by a fire equal to that of the enemy.

Artillery using direct fire requires one minute to get the range after it has unlimbered and when engaged in firing at one target can not open fire upon another in less than one minute. When using indirect fire it will require five minutes to get the range.

Artillery fire will not be counted at a greater range than 3000 yards. At that distance a detachment as large as a battalion of infantry can not remain in position for more than a minute at a time. Bodies of troops larger than a battalion will not remain under artillery fire, but may continue to advance in line of companies with deploying intervals, which soon are broken up into smaller columns.

A battery of artillery under fire of a battalion of infantry at less than 1000 yards range cannot unlimber or change its position.

Artillery with shields is not vulnerable to the direct fire of infantry, but a battalion of infantry firing on a battery, at a range of less than 1000 yards; from a position 30 degrees removed from the line of fire of the battery, can silence the latter.

When opposing batteries mutually engage each other in the open, one of the two will silence the other in a few minutes. This does not mean that one battery is destroyed, but that it must change position or seek shelter.

If the *artillery* is under the fire of hostile guns its ability to engage other arms is to be considered as proportionately decreased.

Artillery cannot, as a rule, take position more than about 10 feet below the crest of the hill protecting it. It must use direct fire at ranges less than 1000 yards.

Indirect fire is not effective against a moving target unless the latter is so large that no change of sight is necessary.

Cavalry cannot remain in the open under the direct fire of artillery or infantry for more than a minute at a time or the time necessary to take a new target. But it must be remembered that cavalry can traverse 400 yards at a gallop, and 600 yards at a charge in a minute.

Cavalry action is mounted or dismounted.

In general terms the mounted action is employed on the offensive; dismounted action is employed on the defensive; a combination of mounted and dismounted action may be used offensively as well as defensively.

Cavalry can charge a single line of infantry or artillery without supports provided it can approach unseen to within 600 yards.

Cavalry acts against cavalry, and, against broken or demoralized troops of other arms, or troops without ammunition without regard to distance. When cavalry acts against cavalry great results are gained by the timely use of reserves.

Cavalry is rarely used dismounted in attack. It may be so used in attack on positions which are inaccessible to mounted men, in which case it would have to be in greatly superior numbers. It may be used to hold the attention of troops while the mounted cavalry is maneuvering for an advantage.

Dismounted cavalry must not get so closely engaged that there will not be time to mount and get away without dangerous confusion. That limit is about 800 yards. Having retired, cavalry may dis-

mount again and proceed as before. It is therefore evident that the value of defensive positions would be different for cavalry and for infantry.

THE CLOSE OF THE FIGHT.

When the troops have gotten lined up for battle and the tactical decision is all that is left to decide the action, it is best to bring the exercise to a close. The umpire-in-chief is the only one to order this and it is done by sending up an acetylene bomb, upon which all the bugles sound the recall, and the troops are marched back to their camps.

DISCUSSION.

Maneuvers usually end with a discussion. When small units are employed these discussions may take place at the close of the maneuver. The chief umpire first consults with his assistants and then discusses the situation in the presence of the assembled officers. In large maneuvers it is impracticable to do this and the general discussion is replaced by others held at the headquarters of the smaller units. On such occasions the higher commanders only attend the general discussion given by the chief umpire.

The discussion should be impersonal—that is, the officers should not be named. Public praise as well as public censure should not be indulged in. Matters of discipline are settled elsewhere than at the public critique. As a rule officers who have been through a maneuver have been able to pick out their own faults, and do not need a public reminder to that effect.

The critique or discussion should be a private affair. All civilians, foreign attaches and newspaper correspondents should be excluded. The presence of these people would cause the meeting to lose something of its value as a medium for the frank exchange of opinion.

One of the main objects of the discussion is to have the umpire-in-chief give his own version of 'the manner of conducting the exercises. Possibly the best practice is to have a general discussion by the chief umpire, and a minor discussion by each assistant umpire, supplemented by conferences at the headquarters of the smaller units. In the large maneuvers the chief umpire's discussion should either be printed and distributed to the several commands or it should be given verbally at a meeting of the higher officers.

The discussion on the ground is good for many reasons but its usefulness is lost when the size of the assembly is too large.