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HORSES AND RIDING.—*Continued.*

CHAPTER VIII.

THE GALLOP. THE GALLOP CHANGE. THE HALT IN THE GALLOP.

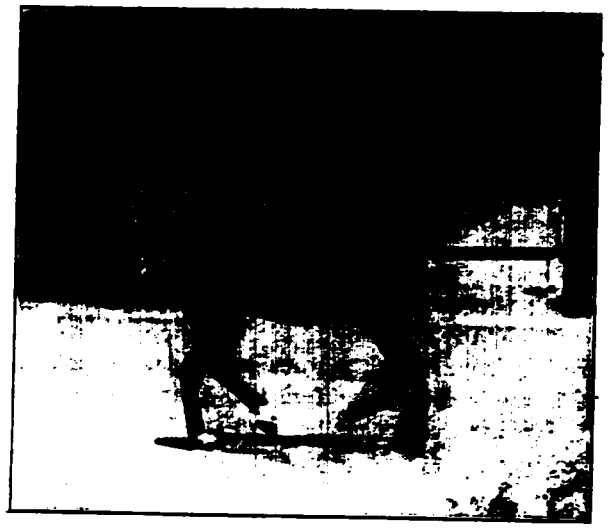
In the gallop the horse, in each stride, goes into air from a fore foot; the opposite hind leg is then planted, then the fore leg diagonally opposed to the last named, and finally the first fore leg from which it goes into air for another stride.

The horse is said to lead with the fore leg from which it leaves the ground, and that leg and the hind leg of the same side are planted in front of the other fore leg and the other hind leg respectively. That is when the horse is leading with the right fore leg, it is said to be *in gallop right*, and that leg and the right hind leg are planted in front of the left fore leg and of the left hind leg. In *gallop left*, the horse goes into air from the left fore leg, and the legs of that side precede, in each stride, the legs of the right side.

In turning in the gallop to either hand, the horse should lead with the side to which it turns so that a bearer will always be under the center of gravity or ready to receive the weight. If in turning to the left, the horse be in gallop right, the animal may fall as the outside legs will be the advanced ones, and there will be no bearer quite under the center of gravity at a critical moment.

When the second hind leg and its diagonally disposed fore leg come to the ground so nearly together as to make one sound we have the ordinary gallop of three beats.

When in extended form the racing horse plants one leg after another like a spoke of a wheel, we have an example of the gallop of four beats; and when in the shortened gallop the horse is so closely united, and its body so supported that the hind leg which is planted second comes to the ground before the diagonally disposed foreleg, we have another example of the gallop of four beats.



GALLOP RIGHT.

Anglo Normand, trained and ridden by the Author.

The horse should not be made to gallop until it has been taught to move in the various forms of collection in the walk and in the trot; otherwise it will be difficult to procure a cadenced gallop in such conditions of the union of forces as are desirable.

To put the horse into right gallop, from the halt, the walk or the trot, the rider should unite the extremities somewhat and increase the pressure of the left heel while

giving an upward play with the right rein; the other heel and the other rein measuring and controlling the acting heel and rein so that the horse will go into the gallop as straight as may be. Once the gallop is taken the rider will maintain the impulses with the heels and control them with the reins so that the pace shall be even regular and cadenced.

The gallop left should be demanded by the right spur and the left rein, controlled and measured by the other spur

GALLOP RIGHT.

Photograph by Dorothy Woods.

and right rein. When a horse turns to the right (or left) in gallop left (or right) it is *false*. When one extremity has galloped right (or left) and the other extremity gallop left (or right) it has the *cross* gallop, which is wrong.

For some time until it is confirmed in obedience, the horse should be ridden in the gallop in the state known as in hand, afterwards the collection should be closer until the shortened gallop, the half-halt, and the halt in the gallop

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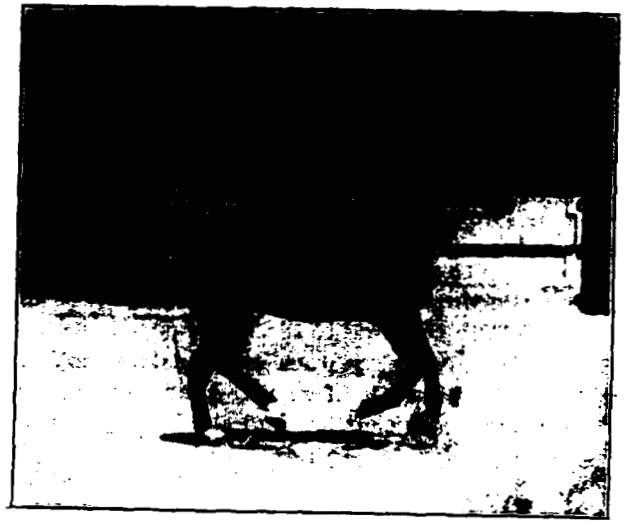

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For some time until it is confirmed in obedience, the horse should be ridden in the gallop in the state known as in hand, afterwards the collection should be closer until the shortened gallop, the half-halt, and the halt in the gallop

may be demanded. Finally the rider may extend the horse in as rapid a pace as he desires, bringing it gradually to a controlled pace before he comes to a halt.

It should always be borne in mind, that, unless some unexpected occasion rises, the speeds should be gradually reduced by the action of the heels and hand, and the halt be made from the walk. But the halt may be made in any stride of the gallop, by the rider closing his heels and raising the bridle hand, without danger of injury to the horse; for the flexed hind legs are carried under the mass in such

RACING GALLOP.

a manner that there is no jar. I have been riding trained horses for more than half a century, and I have never had a horse throw a spavin, and my horses last well; one was perfect for fifteen years. Indeed the work of bending keeps them supple and active long after the age that horses usually become useless for the saddle.

The horse should be ridden in the gallop upon straight lines, in changes of direction to either hand, upon two paths, reducing the circles of Travers until the pirouette in the beat of the gallop results, and in figures of eight.

Most of these movements may require the changes of lead, and that performance, which formerly was looked upon as a mere *toür de force* of the masters, is now so well under-

GALLOP CHANGE FROM RIGHT TO LEFT.
(The right hind leg will next be planted.)
Photograph by Mary Woods.

stood that no man with any pretention to horsemanship, should fail to demand it at any stride.

The gallop change was first described, and a photograph of the movement was first made public in the second edition of my "Modern Horsemanship" which was published in 1886.

The horse may change in the gallop in either of two ways. It may make the change in the order of the fore legs

HALT IN GALLOP STRIDE.
Photograph by Dorothy Woods

first, as they are freed from the ground, in which case there will be a false half-stride until the hind legs make the change. Or, more properly and safely, it may make the change complete in one stride by changing the order of the hind legs as they are freed from the ground, beginning this change

while the forehand has the weight of the mass; *for after the forehand leaves the ground the hind legs are already committed to a certain stride.* It is this latter mode that horseman require in changing lead, for in the turns and wheels the mass will then have a bearer under the centre of gravity.

WHEEL IN GALLOP RIGHT.
Photograph by Dorothy Woods.

Most horses can be taught the gallop change in a very short time, the very high "steppers" only proving difficult, for the lower and more languid the action, the more readily the horse acquires the swing of the gallop change.

To teach the horse the changes of lead in the gallop, it must first be taught to take gallop right and gallop left with precision and composure. Then the man will put the horse in gallop right (or left) and after a dozen strides or so, bring it to a trot, and then demand the gallop left (or right).

Gradually the trotting steps should be eliminated, and the change be made during a half-halt; and, finally, the half-halt should be unobserved, and the change be demanded in the beat of the pace. The speed must not be great, and the aids must be applied with quietness and exactness; the

GALLOP UPON TWO PATHS TO THE RIGHT.
(Anglo Normand, trained and ridden by the Author.)
Photograph by M. F. A.

heel as the rearmost hind leg is leaving the ground, the rein giving an upward play as the forehand rises. That is to make the change from gallop *right* to gallop *left*, the right heel of the rider should give its effect as the left hind leg is leaving the ground and there should be a light upward play of the left rein as the forehand is about to rise, so that the left fore leg will be advanced. The change from gallop *left* to gallop *right* should be made in the same manner by means of the left heel and the right rein. The opposite

heel and the opposite rein should, as in all other cases, govern and measure the effects of the acting heel and rein.

To demand the halt in the gallop, the horse should first be taught to come to the stop by the pressure of the rider's heels and the raising of his hand as his body is bent backwards in the walk and in the trot. Then, in some gallop stride, as the forehand is dropping, the man should lean back, press his heels against the flank of the horse and raise his bridle hand, so that as the weight is taken upon the advanced foreleg the hind legs will go under the mass and check the momentum and the halt will be completed in one stride. A member of my family took a number of photographs as I halted "Charre" in the gallop, and all were successful representations of the movement. As may be understood, twenty-six years experience in photographing moving horses, have produced an expertness that it would be difficult to find in a professional photoghapher. Except in the gallop change we seldom have to repeat an experiment to obtain what is required, and in the picture representing the gallop change in this book, but one shot was taken.

CHAPTER IX.

A CITIZEN'S DUTY TO RIDE. THE AUTOMOBILE AND THE AIR SHIP IN WAR.

It is the duty of every citizen, who is so situated that he can do so, to practice horsemanship, so that when called upon for the defense of his country he may be able to join a mounted corps, for even if all such appeared, we should not have too many mounted infantry and cavalry or trained artillery. The government should furnish good young horses at half the original cost to the trustworthy men, who will agree to serve in the militia regiments, the money thus expended to be returned to the purchaser in ten yearly installments. At the end of the ten years the militia-man should own the horse outright to do with it as he pleased; in the meantime the purchaser should have the horse for any proper use, on the farm or for draught, or riding pursoses, with the understanding that he and the horse shall appear for the annual drill and inspection. This is the method followed in Switzerland, and it works perfectly in a country not nearly so wealthy as ours, but composed of men so honest that no loss beyond reasonable wear and tear is borne by the tax payer, after the first cost. The Swiss army, I may say, is not only a model for all citizen soldiery, but is an effective force even in these days of advanced preparation for the great cause.

The automobile may be of some service in the future as a draught engine in rear of troops; but for many reasons it will be of little or no service as an engine of attack, a few trenches across a road or some slight obstructions due to the topography of the country would render it useless. Of course, if a leader should array his troops upon a well kept, level lawn the squadrons of autos would make havoc among men and horses, and I have seen those protected machines, armed with quick firing guns, that might do some damage to men who would expose themselves.

That the air ship may become a menace to border cities is already evident, but there must always be a limit to their powers and for a party to leave its base for any real distance in an air ship must prove the most disastrous end of all "forlorn hopes."

MAN AT ARMS. TIME OF CHARLES VII.
(The first enlisted Cavalry.)
Mary Woods d'apres de Noirmont.

So far from our having reached the age when mounted men can no longer be effective a little reflection should convince any one acquainted with the history of arms, that we

are now entering upon an epoch when the horseman will hold a very important place in wars.

For thousands of years before cavalry appeared, the

ESTRADIAT. MOORISH PLUNDERER. TIME OF CHARLES VIII.
(The fore-runner of Light Cavalry.)
From an old print furnished by Hautecau, Paris.

horse was used for harness only; and the charge in battle was made by chariots. When, a few centuries before our era, the horseman came upon the scene (men without armor

or clothed in leather, having no saddles beyond a cloth or a pelt) the frightful chariot with its scythe-armed wheels gradually fell into "harmless desuetude."

When complete steel armor was introduced, the knights had everything their own way, and unless some archer or pikeman found a break in the metal, a battle had for them little more danger than the present football match has for a player.

In August 1119, a body of knights under Louis le Gros, King of France, met a similar band under Henry I, King of England, upon a beautiful plain near Rouen, and after contending through a long summer's day, could show only three men, *hors du combat*, smothered, likely enough, in their casques where they fell. In such battles the knights made up the list of prisoners for ransom, the archers, pikeman and varlets made up the roll of those who fell upon the field of glory.

The sword had its bright days in the early part of the seventeenth century, when such heroes as Gustavus Adolphus, Tilly, Wallenstein, Mansfeld, Christian of Brunswick, the pious Cardinals of Valette and Richelieu, and that splendid soldier of fortune de Gassion, used Europe as a chess board for their armies.

The Cuirassiers of that time had complete armor, and carried long blades that would do the work of an executioner. The Carabiniers, protected by the demi-cuirass, bore heavy flint lock arms, and the picturesque Mousquetaires were a sort of mounted infantry, while the dragoons were held only as light cavalry, and the advanced posts were watched by uncovered men on quick horses. But gun powder knocked off the armor and since then "Fitzjames's blade was sword and shield."

The arms of precision carry farther now than ever before should not lead any one to think that the days of cavalry, pure and simple are over. Forty years ago the rifle would kill at the distance of a mile and that did not prevent cavalry attacking infantry. Repeating arms increase the shower of projectiles and improved tactics decrease their peril.

Believe me that the horsemen of our day and those of our descendents will charge with as much vigor and success as ever before. They will not be led across the fire swept plain, where perhaps every living thing would go down in the last thousand yards, but in war there will be always opportunties for horsemen, well led, to get in on their enemies with the sword or lance.

Finally, let me say, with Sir William Napier, that the soldier is one who offers his life for peace and protected homes.

CHAPTER X.

RIDING SCHOOLS AND RIDING MASTERS. GOOD AND BAD HORSES.

I have several editions of Baucher's method, among them a copy of the first, but it is really to the instruction of Henri Franconi that I owe my knowledge of the Master's theories. The writings of Fillis are clear, and any one should profit by them. Only the other day, I picked up a book in the shop of Legoupy of Paris, in which I found many things of interest, and I am ashamed to say that I cannot be certain of the name of the author, but what I wished to quote from, was that in describing the horse of the Midi the author warns his readers that the animal "must be treated like a gentleman." I have no sentimental feelings towards animals, but I deprecate cruel usage of those we have in our power, and such treatment is as useless as it is wrong. The spur and whip are to be employed as aids to carry the demands of the rider, but their applications are to be of the slightest character, and it is very seldom that the sharp rowel is required to touch the horse. Some of the foremost horsemen of Europe are very hard upon their horses, and they give a very bad example to those who admire their skill and courage. There are occasions when a sharp stroke of the whip may send a horse by an object that inspires its fear, but repeated blows will only irritate the animal and probably spoil it.

Writers upon horsemanship of the present day may congratulate themselves upon being clearer in their instructions than were their predecessors. Some persons pretend to understand Xenophon, soldier and statesman, whose work is the earliest extant, and whose instructions, so far as they are clear, are suitable to this day. But after an interval of two thousand years we come upon the Italian Pignatelli, that great teacher whose scholars carried the renaissance of the art throughout Europe, and whose writings are sufficiently obscure. Grisoni, whose book was printed in 1552,

and Count Fiaschis whose amusingly illustrated work saw the light four years later, could have been of no service. I have a copy of both books; that of Fiaschi's has prints in reproductions of pen and ink sketches under the figures of which are noted the songs the rider should sing to suggest the various movements. Pluvinel was the instructor of Louis XIII, and brought that Monarch to be one of the first horsemen of his day. Pluvinel's sumptuous work, with

CUT FROM COUNT FIASCHIS' WORK.

Count Frischi was a pupil of Piquetelli in 1550.

portraits of the King, was published in 1623, and it is in appearance, the finest book that has ever appeared upon the subject. The work of de la Guérinière, one of the equerries of Louis XV, is also a splendidly made volume published in 1733, with drawings by the court painter Parrocel. The Duke of Newcastle, after the defeat of the royal forces by Cromwell near York, went to the Continent and studied the

art in the neighborhood of Paris. He was thought to excel all horsemen of his day, and his work on the training of the *great horse*, as the managed charger was called, had a great vogue. The first edition was issued from Antwerps in French, and many others followed. Previously many Englishmen had gone to the Continent to study the French method of schooling horses, among them the biographer of the pious Henry VIII, Lord Herbert of Cherbury, the nobleman who left his wife because she refused "to draw the

LOUIS XIII IN THE LISTS.

From Pluvenel's Work

cradle over her head" by taking part of her fortune to make provisions for their heir. Henry VIII, by the way imported two of Pignatelli's pupils, but they left little impression upon the riding of their adopted country, and Newcastle was the last of the English who knew anything of horsemanship, as is witnessed by the writings of Lord Pembroke and of all who have followed them.

None of these old works are of any value, and Baucher's

method which appeared about the middle of the last century, is the foundation of all that is good in the art, for even those who attack it show its value, and any reasonable man should recognize the importance of governing the horse through its instinctive yielding rather than by trusting to its good disposition.

Does it not seem senseless for men to ride badly for many years, in fact throughout the active parts of their

DE LA GUERINIERE. 1733.

(Equerry of Louis XV.)
From the Author's Work.

lives, when a little care and practice would make them fair, if not good, horsemen. There is a wide spread idea that the sportsman neglects all the refinements of horsemanship and follows the bounds at a breakneck speed on a horse whose training has only been over obstacles, and that kind of riding is considered good enough for pleasure or war.

The sportsmen of the Continent, French, German, Austrian, Belgian, etc., are as bold and as accomplished as any in England or in America, and have far greater knowledge of the training and management of the horse. They have, too, far more varieties of sport; although Punch and other such authorities have taught us that the continental sportsman is a weak and ridiculous creature. But the chase of the stag, the wolf, or the boar is no less manly than galloping over the grass or plough after a bagman imported from the low countries, or after an aniseed trail, not to mention the *battues* of farm bred pheasants which are not even indigenous.

In Europe, on the continent at least, horsemanship is considered as important a part of a gentleman's education as mathematics or grammar: and the course followed in the riding schools is long and thorough. After a man can sit the *sauteur* in a fairly violent effort, he is prepared to be confident and easy in any motion that a horse, untrained in that trying but artificial plunge, is likely to make, and ordinary jumping is afterwards mere child's play.

After an officer has passed two years in a continental riding academy he is either a finished horseman or his case is hopeless. The American who goes abroad to learn horsemanship, may have the same thorough training in several of the private schools which are superintended by those who give instruction exactly similar to that of the government schools, say that of Pellier or of Lefebore of Paris.

It is a great mistake to frighten recruits or beginners with horses and their ways. I take it that every man of normal intelligence fears the horse if unaccustomed to it. It is very difficult to restore confidence in the minds of those who are timid in the saddle, and it is not safe for such to ride, for the most stupid horse soon discovers whether or not it be the master and becomes a tyrant if it dare. It is not necessary to punish a horse to assert one's determination. A composed manner and a firm course is the only way in which to obtain the real mastery over the animal. No one but an expert should undertake to dominate a vicious or a spoiled horse, but one that is simply fresh or gay needs work only to render it steady. The horse is an animal of simple ideas, and may often be turned from some mutiny or

disorder by surprising it into a new train of thought. A fixed vice or trick can never be wholly eradicated. A good horseman may find no difficulty with an animal that has a vice or trick, but the moment it falls into the hands of an unready rider it will revert to its misconduct. It is important that the owner should know the ancestry of his horses, even of those of cold blood, and the history of the training and previous conduct of those he buys. It is better to pay a double price for a horse inscribed in the Kentucky saddle-horse stud-book than to get hold of an equally promising horse that has perhaps broncho blood in its veins. In France any horse fit for a gentleman's use is inscribed in some register, and we shall come to that in America in time. It certainly is not wise to acquire a horse that traces back to Ainser, a lunatic, to Boston, who transmits blindness, or to any one that had physical or mental defects. A little inquiry will nearly always prove to a purchaser whether he is looking at a horse of good or bad antecedents.

CHAPTER XI.

UPON THE TREATMENT OF THE YOUNG HORSE.

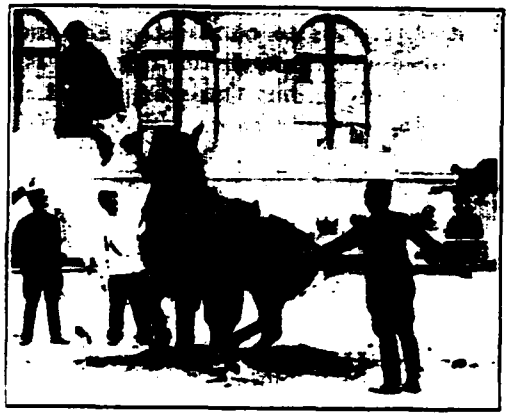
It is not only the broncho, or range-horse that can make a buck jump. Any highly bred colt that has been permitted to run free until three or four years of age, when first taken up and saddled can and may plunge as violently as any "bad" horse from Wyoming. But, by a proper method of treatment, the domestic horse becomes amenable to discipline, and never or seldom makes any furious resistances after the first objections to restraint. The motion of the *sauteur* of the academies is as disturbing as it is possible for a pillared horse to make, but the wheels and motions of a free horse are undoubtedly more difficult to sit. There is one marked difference between the *broncho* and the domestic horse, due to "the call of the wild" as well as the method of training.

The former often submits only when it no longer has strength to struggle, while the latter usually recognizes the inevitable. Tight girthing and cruelty in many forms is undoubtedly answerable for much of the wickedness of the broncho, and the animal is passing away like the buffalo and other such forms on our continent, but for a long time we shall have enough of the blood in cheaply offered western horses. We have all heard the romantic story of the desert horse, which from its birth is treated as one of the family and never knows what liberty signifies. No doubt that is the proper method of rearing a horse but it is difficult to apply. If we take up a docile colt at a much later age we may correct the error by a systematic training, and have a perfectly satisfactory result, with probably a longer life of usefulness.

A farmer whom I know took up two colts "to break," one from its birth and one that was free until three years of age, both of the same strains, with the consequence that

when the animals reached four years of age and upwards he could see no difference in their conduct.

The Swiss army being a militia, it is not required that all its officers, shall maintain horses, and in Thun is the *Pferd Austalt* where seven hundred high class chargers are kept on hand for sale or temporary use. Every year a large number of "remounts" are introduced and thoroughly trained under the supervision of Colonel Vigier von Steinbrugge. The annual increase of three year olds comes from the farms of Ireland, France, Hannover and Hungary, the latter being held in the highest esteem, and nearly all of these are



SAUTEUR. SAUMAR SCHOOL.

Photograph by H. Guionie, Saumar.

unbroken; the German horses being the most docile but the least resistant. Colonel Vigier, as the Swiss love to call him, is one of the finest riders in Europe, and it would be difficult to find any one who could supply his place in Thun, for he is not only the judge of all the horses selected for the establishment but he personally superintends their training, and it can be said of his success that of the hundreds of citizen soldiers who get horses from the *Pferd Austalt* no serious accident has ever happened through the misconduct of any of the horses. Colonel Vigier informed me that

many of the three year olds were very violent in their resistances when first taken into hand, but that these game colts having given submission become perfectly docile and were the favorites of the men. It was one of his assistants, Major Schwendiman, who remarked to me that if he had to ride ten miles in haste he would select a thoroughbred, but that to ride around the world he would mount a horse from the Hungarian farm.

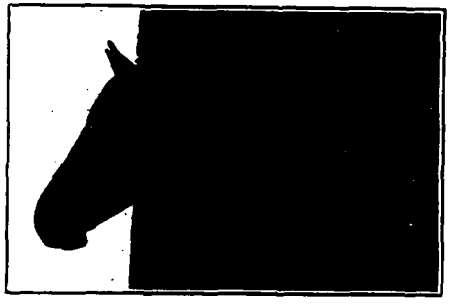
At whatever age the young horse is taken in hand, it should not be required to do any real work until it has became fully developed. Some horses are strong at five years of age, others due to the peculiarities of breed, or to their early neglect in the hands of the breeders, do not get their strength until six or seven years of age. The rule in the military services of Europe is to put the horse into the ranks at six years of age, when with care and without accidents, it should be serviceable for ten or twelve years.

Silvana, one of my horses, performed all the *manége* movements with grace and agility at twenty-five years of age, and many harness horses do good work up to the age of thirty years or even more.

At three years of age at latest, the young horse should be put upon the longe-line, or be driven before the trainer in a pair of long reins, to begin the discipline by which it is to be made obedient and serviceable. If it be put on the longe-line it should be made to pass about the man, to either hand equally at about the distance of fifteen feet. From time to time the colt should be brought to a halt and then be made to proceed, and it should be taught to change the direction of the movement. At first it might be better for the trainer to lead it, by holding the rein close to the head, in a circle of about thirty feet, and at no time should the horse be permitted to go more rapidly than a slow trot; after it passes at the full length of the line, a few pulls up and down on the line will act as a demand for reducing speed or for a halt. I always use the side lines from the mouth to the surcingle to keep the horse steady and to prevent the nose being thrust out too far. The man should never permit the horse to have a straight pull away from

him, or the animal may get away and defeat his efforts to establish discipline.

If the trainer elects the long reins for the purpose of exercising the colt, the surcingle must have loops on either side, half way between the back and the belly, through which the reins must pass so that the horse may not make undesired turns towards the trainer. This driving the horse before the man on foot is excellent practice and may be used in connection with the work on the longe line. The horse should be longed or driven, for half an hour in the morning and for the same length of time in the afternoon. Great care should be taken not to give the horse fright, and it should be made accustomed to being handled in every



HEAD OF CHARBE. ANGLO-ARAB. QUALIFIE.
Property of the Author.

part. When the horse has confidence in the man the lessons in leading on the longe or in driving by the reins may be given on the road to accustom the horse to the sights and sounds that it must hear in time.

If the trainer conducts these exercises with care and caution, there should be no difficulty in mounting the horse. A few lessons with the trainer on foot should be given to the horse saddled and bridled; the stirrups, in the earliest lessons looped up, afterwards permitted to dangle. Some day when there is no wind and no flies to disturb the horse, the trainer may quietly mount and let the horse move off a few steps and as quietly dismount. The mounted lessons should be

increased in length very gradually, and the horse be taught to take hold of the bit and to bear the pressure of the rider's legs and the taps of the whip.

It is much easier to give the first lessons in the company of an old steady horse; but the young horse will then for a long time expect society, and it often becomes restive and mutinous. I always prefer to train my horses in lonely places and usually I do not have even a groom. It is almost

ARAB FOAL AND DAM.
Photograph by E. L. A.

useless to attempt giving lessens to a young horse in very severe weather, or when the flies and other insects are troublesome. In our climate, May and June, and October, November and December are the best months in which to begin work with young horses. If a covered *manége* is convenient, it should be used for the early exercises. When the horse is steady it should be ridden every other day in the open, be made to cross on the longe; or on the reins, over

banks, walls, water and other obstacles, and have exercise sufficient to keep it in good condition.

One of the first lessons to be taught the young horse is to approach the trainer in answer to whip taps upon the chest. At first the horse will draw back and the taps should be applied until it moves forward freely, then the animal should be rewarded by a caress. In a very short time a horse will quickly respond to the touch of the whip, and even approach the man as he makes the motion of giving the tap. But in leading a *green* horse, one not accustomed to obeying the whip, the man should walk either at the shoulder or in front of it; that is, he should not face the horse until it is so accustomed to him that he can do with it as he pleases. A horse well trained should be so complacent that an accidental blow or hurt should not disturb it. The only time I can remember giving Alidor a severe stroke with the spur, was in vaulting into the saddle at the gallop and I did not discover the injury by any movement of the horse. I have seen a nervous, sensitive, but highly trained thoroughbred receive a severe wound from an exploding shell without moving from its tracks.

The *cavesson* does not seem in as high favor at present as it was five and twenty years since, but neither are horses as well trained as they were in the past. At the same time I observe that those who are considered the best horsemen make liberal use of the cavesson in training young horses and in correcting the fault of those which have been spoiled.

There is no reason why anyone cannot learn how to train a horse thoroughly. One must study some good method and practice it as well as he is able. That there will be many mistakes and awkward situations at first is inevitable, but the rules are few and simple and in time any man can bring a horse up to the measure of his possible expertness. One must have no fear and "treat the horse like a gentleman," but he must insist upon the gentleman doing what is demanded.

HORSE BREEDING IN PRUSSIA.

By Mr. A. M. THACKARA, U. S. Consul-General, at Berlin.*

BREEDING FARMS IN PRUSSIA.

WHILE there is no lack of encouragement in Germany of the breeding of horses and other animals, there are no breeding farms owned by the Imperial Government itself. In various states, however, in Prussia for example, there are such farms and also stations for stallions, which are the property of the federal authorities and are devoted to the improvement of the breeds of horses.

The Prussian Government horse-breeding farms, of which there are five; the country stallion studs, of which there are eighteen, and all matters pertaining to the breeding of animals in general in which the Government participates are subject to the administration and control of the Minister of Agriculture, Domains and Forests, under the technical management of the Director General of Studs.

For the purpose of discussing and giving opinions upon all questions relating to the national horse-breeding when called for, there is an advisory committee composed of officials of the Ministry of Agriculture, Domains and Forests, representatives of the War Department, of the Union Racing Clubs and of the Chambers of Agriculture. The regulations proposed by this committee in 1888, and adopted, are still in force for the general treatment of horse-breeding in Prussia. The aim of the Prussian Government is not only to provide horses for the army, but also to supply the requirements for agricultural purposes. There are certain provinces in Prussia, namely, East Prussia, West Prussia, Posen and Hanover, which, on account of their hippological development, are especially suitable for the

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breeding of horses for military purposes. These are called "Remount Provinces," in which the Government supplies exclusively thoroughbred stallions of the most powerful kind, to breed sturdy horses which have both speed and endurance; in fact, in these provinces Government aid is given only for the promotion of the breeding of military horses.

In the remount provinces above mentioned, during the last ten years, the military authorities of Prussia have purchased on an average 8,000 to 9,000 horses annually. Besides, the Bavarian and Saxon Remount Commissions buy every year almost the entire cavalry remounts for Saxony and Bavaria from Prussia. The average price paid for the horses was 900 marks ($214.20) each.

The purchase of military horses is not exclusively limited to the so-called remount provinces, however, but horses for the army are also bought, naturally to a smaller extent, in the other provinces where there is mixed breeding. In the latter, the Government leaves an entirely free hand to the private breeders, but furnishes the stallions for covering warm or cold-blooded mares,* according to the demand. In the Rhine Province, for instance, and in the Provinces of Saxony and Hessen-Nassau, the Government stallions are almost exclusively of the cold-blooded race, because in these parts of the country the private breeders pay more attention to those breeds.

The aid which is extended by the Prussian Government in improving the breed of horse may be divided into two categories —(1) the breeding of horses by the Government itself, and (2) the assistance rendered with the co-operation of the Director General of Studs, to farmers and others, by granting prizes for races, prizes for good results attained by private breeders, etc.

GOVERNMENT HORSE-BREEDING.

As stated before, in Prussia there are five principal breeding stud farms which are devoted to the breeding and raising of thoroughbreds and half-bloods.

*Cold-blooded breeds are the Percheron, the Clydesdale, Ardennes, Belgian, Danish, Brabant, Shire horses, Belgian cross, and the French Plough horse. The rest are warm-blooded breeds.

They are as follows:

Trakehnen with 15 stallions and 350 brood mares.
Graditz with 10 stallions and 190 brood mares.
Beberbeck with 5 stallions and 100 brood mares.
Georgenburg, 2 stallions and 50 brood mares.
Neustadt-on-Dosse, 2 stallions and 50 brood mares.

With all of the above, farms are connected for the production of the fodder necessary for the supply of the studs. Sufficient quantities of hay and straw are produced, but oats, which are always of the best quality, have to be bought from outside from the funds provided for in the budget and at the disposal of each stud for the purchase of forage.

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At Graditz, where thoroughbred horses are raised, there is a stock of fifty thoroughbred brood mares, which are only covered by thoroughbred stallions. These are partly kept in Graditz, and some on the farm of Romerhof in the Rhine Province, which was purchased by the Government in 1905. On the other farms belonging to Graditz the breeding of half-breeds is also carried on.

Up to the year 1866, on the other principal stud farms, part of the breeding consisted of the raising of thoroughbred horses, but since that date the breeding of thoroughbreds has been concentrated at Graditz. The latter is the only principal stud where both thoroughbred and half-breed horses are raised, but the latter are kept apart from the former.

Of the horses raised on the principal stud farms only those animals which are in every respect fit are selected by the Government for breeding purposes—stallions for service at the principal breeding farms, or as country stallions at the country studs; mares for supplementing the stock of brood mares at the principal breeding farms. From the remaining young horses, such as are not entirely suitable for breeding purposes, or are unfit for the same, forty are selected for use in the Royal Stables, in accordance with a privilege granted to the Emperor, and the rest are sold at public auction to the highest bidder. Before the sale takes place a list of the horses to be sold must be published, giving their pedigrees, colors, sizes, etc., and a statement of their blemishes.

The selection of animals from among the young stallions bred at the principal breeding farms to serve as country stallions is made by a special committee consisting of the General Director of Studs, two managers of country studs appointed for each individual case, a representative of the Military Remount Commission and a representative of the Chambers of Agriculture of the respective provinces.

To improve the breeds at the principal breeding farms and the country studs, thoroughbred stallions and thoroughbred mares are purchased abroad from time to time, especially in England and in France, from the funds for the purchase of horses provided for in the Budget.

In the Budget of 1907 the fund for the purchase of horses amounted to 1,850,000 marks ($440,300), together with a special fund of 200,000 marks ($47,600). It serves, as stated above, for the purchase from private breeders of additional stock for the different stud farms. On the principal breeding farms from seventy to eighty country stallions are raised annually. As a purchase price for an ordinary country stallion (cold or warm-blooded) an average of 4,200 marks ($999.60) is paid. It is estimated that the stock at the country stallion studs is increased annually as follows:

Warm-blooded horses, 12 per cent of the stock.
Cold-blooded horses, 15 per cent of the stock.

The prices paid for full-blooded stallions and full-blooded mares are naturally higher. For the full-blooded stallion, "Ard Patrick," for instance, the Government paid 428,000 marks ($101,864), for "Galtee More" 280,000 marks ($66,640) and for "Cajus" 246,000 marks ($58,548).

The purchases are made by the Director General of the Studs.

The fund for the purchase of horses serves not only for buying material for the Government breeding farms, but also to assist those horse-breeding associations which are constituted according to the Prussian Government Regulations of January 30, 1898, in purchasing stallions by granting loans without interest, repayable in installments, at the latest in six years. The total amount of these loans, which in individual cases is a maximum of the average purchase price of an ordinary country stallion, at the present time 4,200 marks ($999.60), is from about 40,000 to 50,000 marks ($9,520 to $11,900). When the loans are made, the Government reserves the right of co-operation of its stud directors in the selection of the stallions, and the control and supervision over their care and treatment. There are at present about seventy horse-breeding associations which are receiving assistance from the Government Stud Administration.

There are other horse-breeding societies in Prussia—about 200 with 280 stallions—which are not assisted by Government loans, as they were not organized according to the regulations for the formation of horse-breeding societies above mentioned.

At the head of each of the five principal breeding farms there is a "director of studs," with the rank of Ministerial Counselor of the Third Class. The Stud Directors at Georgenburg and Neustadt also have charge of the stallion depots connected with these studs. The Stud Directors, who are selected from the most efficient managers of the country studs, draw a yearly salary of from 6,600 marks to 8,700 marks ($1,570.80 to $2,070.60), the increase taking place after each three years of service, till the maximum is reached. In addition, they have a free residence and table money for the entertainment of visiting committees, authorities of the Agricultural Ministry, etc. Not only the management of the studs, but also the supervision of the farms and of all the employes are under the direction of the Stud Directors. The employes consist of regular Government officials with right to pension and of persons engaged by contract with right of dismissal without pension.

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The methods used at the principal breeding farm of Graditz will serve to indicate the general system of horse-breeding by the Prussian Government in vogue at the other farms.

GRADITZ.

The principal breeding establishment of Graditz, located in the Province of Saxony, consists of three stud farms, Graditz, Dohlen with Neublesser and Repitz, situated about four miles

from each other, and the stud farm at Romerhof in the Rhine Province. It comprises altogether 1,394 hectares (3,445 acres). The agricultural work is managed by a special farm superintendent under the supervision of the Director of the Stud.

The stock of the stud comprises on an average 540 horses, of which there are 10 principal stallions, 170 brood mares—of which 50 are thoroughbreds—and 3 stallions on trial, the remainder consisting of young stallions and mares.

As already stated, Graditz is the only one of the Government breeding farms where thoroughbred horses are raised and also half-blooded horses, the latter being kept separate.

The young thoroughbreds are raced in the flat races of Germany, sometimes also they are sent to other countries. For this purpose they are thoroughly trained. The training begins at the age of 1½ years. In August they are broken to the saddle by lightweight boy trainers, a few weeks later they are exercised in light galloping, and before the beginning of the winter they are tested on the open track over short distances, in order to get an idea of their merits. In winter the work, which consists of walking and galloping, is carried on in covered riding tracks. At the age of 2 years in the Spring the hard work on the race course begins. Their full racing career is closed at the end of the fourth year, as the horses are then used for breeding purposes.

The training of the horses for races is under the guidance of a head trainer, who receives an annual salary of 7,000 marks ($1,666), as well as 10 per cent. of the prizes won. The stud also keeps one jockey and twenty training boys. From the amount won by the stud horses, with the exception of the 10 per cent. given to the head trainer, only the actual costs accruing from the participation in the races are turned into the stud treasury. The balance is appropriated to the Union Club for the purchase of racing prizes, for instance, the "Graditz Stud Prize."

The thoroughbred mares are covered by the thoroughbred stallions about the middle of February, as the mares, with an average bearing period of eleven months, should not foal before the 1st of January. The half-blood mares may be covered earlier.

The fodder rations for the thoroughbreds and the half-breds are the same, with the exception that the half-blood stallions receive the full rations, namely, 14 pounds a day, from November 1st, while the thoroughbred stallions only receive the full ration from January 1st, that is to say, about one month before the covering period begins. As soon as this period is over—on the 1st of May for thoroughbreds and 1st of June for half-breds—the ration of oats is reduced to 10 pounds per diem, and later, when there is more green fodder, they are fed with luzerne and clover, and the oat rations still further reduced to 8 pounds. From the middle of September, when their coats are changing, more oats are necessary. They therefore receive a daily ration of 10 pounds. Mares with foals require a larger quantity of oats, but when they are all day in the pasture fields, and the grass is ripe or almost ripe, they get, as a rule, neither oats nor hay. The changes from dry to green fodder and vice versa are made gradually. The mares are not deprived of their 6 pounds winter ration of oats immediately at the commencement of the pasture season, but the quantity of oats is only gradually decreased. Likewise the substitution of dry for green fodder commences in September, according to the atmospheric conditions then prevailing.

Brood mares with foals receive always 10 pounds of oats fourteen days after they deliver, whether they have full pasture or not, as the foals eat with their mothers. As soon as the colts have teeth they are also given oats, as muscle-making nourishment is of great benefit to them. The hay ration is not given to the mares which have full pasturage. It is necessary that when the colts are getting such nourishing rations that they should have plenty of exercise. Therefore spacious stalls are provided where the colts can be run about. Later, when on the pasture fields, the exercise is increased.

The foals are taken from the mares in from four to six months, according to their development, and when they have lost their first coats. Much, of course, depends upon the mother, whether she is young or old, bearing or non-bearing, and whether she is in a good or bad state of nourishment. During the first year the half-bred foals receive from 6 to 8 pounds of oats per diem; the thoroughbreds are given as much as

they can eat up to 10 pounds. In the second year the half-breds receive from 8 to 10 pounds of oats, which is the ration up to the fifth year. The thoroughbreds are given from 10 to 12 pounds and over, also additional fodder in the form of rice, horse-beans and also luzerne instead of hay.

FORAGE AND PASTURE.

As already stated, the principal breeding farms raise their own hay and straw, but only a portion of the oats required, the most part being purchased in open market.

In summer the mares, with their foals, are put out to pasture. The average rations given to the stallions, mares and foals, according to the seasons, including the pasture season during the hot period, are shown in the forage statement of the principal breeding farm at Trakehnen, which I transmit as an annex to this report, marked *D*.

Constant care and attention are paid to the meadows and pastures, as the quality of the hay and other fodder is of the utmost importance in the development and the nourishment of the horses bred at the farms. Only the most up-to-date and scientific agricultural methods are employed. Both artificial fertilizers and ordinary manures are used. Moreover, by a proper regulation of the water courses, the meadows and pasture lands are either drained or irrigated, as the necessity arises, in order to obtain the best possible crops of hay.

The principal stallions at the Government breeding farms are intended primarily for the covering of the mares belonging to these farms. They are only allowed to cover private mares when the latter are of first-class breed. This is especially the case at the thoroughbred stud farm at Graditz, where the stallions are of the very highest breed, Ard Patrick, for example, for whom the Government, as stated before, paid 420,000 marks ($99,960). This stallion is only used to cover thoroughbred mares. The covering fees for the stallions vary from 50 to 300 marks ($11.90 to $71.40). The rates, which are small in comparison with those charged by owners of private thoroughbred stallions, are never exceeded by any of the Government studs, as the Government stallions are also intended to improve the breeds of the private breeding establishments.

COUNTRY STUDS.

At the country studs no breeding is carried on. They are solely depots for Government stallions, which, during the covering period, are sent to the covering stations in various parts of the country for services with private mares for a fee. At present there are eighteen country studs:

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The Government Stud Administration accommodates the selection of the stallions to the demand of the local breeders. For instance, in the "remount provinces" of East Prussia, West Prussia, Posen and Hanover, only thoroughbred and a few half-bred stallions are used. In the Rhine Province, Hessen-Nassau, Province of Saxony, heavy stallions (cold-bloods) are mostly employed, among which those of the Belgian breed predominate, while in the remaining parts of the country there are various breeds, Belgian, Danish, Oldenburg half-bred stallions, also a few thoroughbreds.

To prevent the deterioration of the breed of horses in Germany, before private mares can be covered by private stallions, either native or foreign, the latter must be passed upon yearly and approved by a committee of experts called the "Kor Commission." The regulations governing the composition of the committee, the fines and punishments for non-observance of the rules, etc., are issued and executed by the police authorities of the various districts.

The Government stallions are not subject to the selection mentioned above, before covering private or other mares.

PERSONNEL OF THE COUNTRY STUDS.

At the head of each country stud is a director, who belongs to the fifth class of higher Government officials.

The salaries of the "Landgestut" directors range from 3,600 to 6,000 marks ($856.80 to $1,428), with an increase of 500 marks ($119) every three years, the final increase being 400 marks ($95.20), in addition to which they enjoy a dwelling rent-free.

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The stud attendants are not Government employes with right to pension. They are engaged on the basis of a special

service contract. In case, however, of incapacity for service, they are granted a continuous allowance up to 40 marks ($9.52) a month from the stud funds.

CARE AND FEEDING OF THE STALLIONS.

The "Landgestut" stallions, as a rule, remain from the 1st of July to the end of January in the stud stables, and from the beginning of February (in the case of some studs a little later) to the end of June they go to the covering stations.

The methods used at the different country studs for the care and feeding of stallions are in general the same as those employed at Gnesen, which are as follows:

At 5 o'clock in the morning (in the summer half an hour earlier) the stud attendants enter the stables. The horses are then watered from cisterns, in which the water has remained over night, after which the fodder is shaken out and weighed under the supervision of the saddle-master. In general, the stallions receive oats, mixed with "Hacksel"—half "Hacksel" and half oats. The "Hacksel" consists of straw and Lucerne hay, cut pretty long—about 1½ inches—so that the horses do not feed too quickly, and to insure better mastication. In the mornings the horses receive the smallest portion, as they are ridden soon after their meal.

The stallions receive in the stables after they return from the covering stations, from the 1st of July to the 1st of December, daily, 10 pounds of oats, 8 pounds of hay and 9½ pounds of straw; from the 1st of December to the 1st of February, 11 pounds of oats and the same straw and hay rations. From the 1st of February, when the stallions are at the covering stations, they receive 11 pounds of oats, 7 pounds of hay and 7½ pounds of straw. These are the *average* rations, but the feeding must be individualized, as the big 3, 4 and 5-year-old heavy stallions require a much stronger fodder, especially as the latter are trained in the sulky and the saddle. These receive in the stables an addition of 4 to 5 pounds of hay and ½ pound of horse-beans per stallion. Also during the covering period while at stations, the stallions receive, each according to need, additional oats. Heavy and lazily covering stallions receive also wheat or peas, about 1 to 1½ pounds per stallion extra. The

individualizing of the fodder is a most important consideration, as the rations work differently with different stallions. After the covering period at the station the stallions receive, in the stables, green lucerne, mixed with the evening rations of hay, and from the 18th of October to about the middle of December they receive, after the evening meal, about 1 to 1½ liters of horse-carrots, washed and cut.

In the mornings the stallions receive the smallest part of the rations—2½ pounds of oats—as they commence exercising as early as 6 o'clock; at midday—that is to say, at 11 o'clock—3½ pounds, and in the evening the rest. About 8 o'clock in the mornings the stallions receive 1⅛ pounds of hay, so that they are not tempted to eat the straw; afternoons, about 1:30 o'clock, after the watering, about 1½ pounds of hay during the grooming hour, and the rest, about 5 pounds, is given after the evening feed, about 6:30 o'clock. The straw destined for bedding-down is given out in the forenoon at 10:45 o'clock and afternoons at about 5 o'clock, and spread in the stalls and boxes. The main considerations for the good condition, health and development of the stallions are plenty of exercise and work, best quality of fodder and well-ventilated stalls, so that the stallions breathe only pure air.

At the covering stations the forage is supplied by the keeper of the station. The regulations for the care of the stallions are the same as at the stud stables.

In the remount provinces, and also in some of the other provinces, the young stallions take part in the running and trotting races which are held in the Autumn. For these purposes they are suitably trained at the studs.

The "Landgestut" stallions are, besides this, well ridden and driven.

When young, fine half-blood stallions are purchased from private breeders for supplementing the stud stock in West Prussia, they are taken when 3 years old. These stallions are then sent to the Landgestut, at Cudwallen, where there is the necessary space, and ridden by young training boys, so that they can be distributed in the Autumn among the remount provinces. This practice has proved particularly advantageous for the promotion of the breed of army horses, as, according to

previous experience, the young stallions in the possession of private breeders are not given the necessary sharp exercise which they require for their development.

The ordinary stallions purchased by the "Gestut" administration are for the most part 4-year-olds, and go direct from the seller into the "Landgestut."

COVERING FEES.

Covering by the stallions takes place under the conditions mentioned by the regulations. The distribution of the stallions among the various covering stations is publicly advertised. The covering fees, which range from 5 to 20 marks ($1.19 to $4.76), are fixed by the director of the "Gestut," according to the wealth of the district and to the value of the stallion. For full-blood stallions a somewhat higher fee is demanded, but even the latter fees, in the interest of the horse-breeding of the country, are kept within very moderate limits.

The 3,315 country stallions provided for in the Budget of 1907 bring to the Government an annual income in covering fees of marks 2,161,590 ($514,458), that is to say, 652 marks ($155) per stallion. It should be stated in this connection that the average income in certain provinces (for instance, East Prussia, Hanover) is considerably higher and amounts to from 875 to 1,000 marks ($208.25 to $238) for a stallion, whereas in other districts the income per stallion is considerably behind the general average.

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TECHNICAL INSPECTION OF THE STUDS.

Every year at the close of the covering season the various country studs and the principal breeding farms are inspected by the General Director of the Studs, on which occasions the whole stock of horses is examined, and those useless for breeding purposes are retired from service.

The horses thus disposed of, so far as they are not taken for driving horses or draught horses by the studs, are sold at public auction, their defects being previously advertised, as has been stated before.

Besides the Government principal breeding farms and country studs, the State, for the further development of breeding, extends pecuniary assistance in various ways to the breeding associations, private breeders, etc.

There are funds provided in the Budget for granting premiums and awards at horse and cattle shows for good stock. These take the form of honorary prizes which are usually given to the owners of large breeding establishments; money prizes which are awarded to the smaller breeders, and free covering certificates. Funds are also made available for the purchase of good breeding mares and foals from private owners. The fact is also recognized that the pedigree of animals is most necessary in successful breeding; so stud-book associations are encouraged and Government funds are furnished for their formation.

The Government also places at the disposal of private breeders exercising grounds and foal pasture, so that their horses can be broken in and trained, and can be sold to a purchaser direct without having recourse to the middlemen and professional trainers.

The Government also recognizes that the care of the animals' feet is of the utmost importance in the raising and maintenance of efficient horses, and that only too often the animals suffer not only from the lack of knowledge of the owners, but also from the incapacity of the shoers. A law is in existence in Prussia which forbids any one to carry on the trade of horseshoeing who has not passed a practical and theoretical examination, and who has not demonstrated his proficiency. A large number of blacksmiths' schools have been established throughout the monarchy, some of them by the blacksmiths' guilds and others by the Chambers of Agriculture, where examinations are held in the presence of Government Commissioners. All of these schools receive pecuniary assistance from the State.

The breeding of horses and other animals is also encouraged by the holding of agricultural shows and cattle expositions in the various provinces. These exhibitions are greatly aided by Government assistance, in the way of prizes and premiums.

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SERVICE HORSES FOR THE ARMY.

The number of horses in the army in time of peace amounts to about 110,000. Every year at the end of the Fall maneuvers those unfit for service are discharged and the vacancies are filled by taking up the remounts.

The army requires annually from 13,000 to 14,000 remounts. The average time of service of cavalry horses is fixed at ten years, that of field artillery horses, whose service is much more severe, at nine years. The average age of the horses of a squadron varies from nine to ten years, that of a field battery from eight to nine years.

Germany is in the fortunate position of being able to obtain her entire supply of military horses at home. Five Remount Commissions travel over the horse districts in spring and summer, and buy three-year-old horses (occasionally also four-year-olds), suitable for the military service.

These raw and as yet unbroken animals are then collected at the remount depots, and, by proper feeding, are prepared for the demands of their coming military service.

Of the twenty-five remount depots, one is in Wuertemberg, two in Saxony, four in Bavaria and the remainder (eighteen) in Prussia. The principal remount provinces are East and West Prussia, Hanover and Posen, the Rhine Province and Saxony. The first four provinces raise warm-blooded horses and furnish the remounts for the cavalry and the field artillery; the two last named raise cold-blooded horses, which can, on the whole, be principally used for siege artillery. These cold-blooded horses are not first put up in the remount depots, because in their rearing, build, care and feeding they are so different from warm-blooded horses, but are turned over directly to the siege batteries.

East Prussia is at the head of the remount provinces, not only in the quality, but also in the number, of horses bought. The great national half-blood stud farm at Trakehnen has put its stamp on all the East Prussian horse-raising. The tough East Prussian is the born soldiers' horse. Hence, most of the cavalry and many of the field artillery remounts come from East Prussia and from the horse districts of West Prussia, the products of which are nearly equal to those of the East Prussian remounts. Posen also furnishes a noble light soldiers' horse. The Hanoverian is better suited for the heavy cavalry and for the field artillery.

In the summer the remount depots turn their then four-year-old remounts over to the receiving detachments sent for that purpose from the various subdivisions of mounted troops. The assignments to the different regiments are made by the Remount Commissions before the arrival of these receiving detachments. The remounts intended for *officers' horses* are first selected. The rest of the horses are then divided into *riding horses* first and second class, and into *draught horses* first and second class. In several regiments special care must be taken with reference to the colors of the remounts. The first Liebhusaren Regiment, for example, can only receive grey horses. The Fourth hussars in Ohlau, according to an old tradition, are mounted in part on dapples.

White or grey horses, however, by a recent order, are no longer purchased as remounts, since that color is not regarded as serviceable, a view which, in this age of utilizing terrain and cover and of field uniforms, appears reasonable.

In the regiments the remounts are generally assigned to the different squadrons and batteries according to color. The bands are generally mounted on horses of similar color. In the field artillery nearly every regiment has sorrel and black horse batteries, the remainder of the batteries having bay horses in their stables. The sorrel is generally regarded as the smartest horse, and has also a pleasing appearance. The black horse is also a popular soldiers' horse. The horse-artillery battalion of the First Field Artillery Regiment, stationed in the center of the horse district in East Prussia, and which has, moreover, the best horses in the entire army, has almost nothing but black horses. They still tell of a remark which the old Kaiser Wilhelm, on the occasion of a parade, made in the '80s to the then commander of the horse-artillery battalion:

"You have such fine horses in your battalion that I would like to take a pair along for my stables."

During the absence of the troops at the fall maneuvers

the men left behind in the various garrisons begin to accustom the young horses to saddle, bit and rider. The actual breaking-in or training of the remounts begins in the fall after the return of the mounted troops from the maneuvers. The remount training lasts through two winters and the summer between. Not until then are the horses (now six years old) assigned to regular service in the squadrons and batteries.

In the mustering-out of the unserviceable horses in the fall the four-legged veterans are mostly sold at public auction to the highest bidder. Many a small farmer has thus obtained very cheaply a horse that is still very useful for his purposes.

Of late years, however, more and more of the horses mustered out from the cavalry and field artillery have been taken up by the *Train* and the horsed batteries of foot artillery (siege artillery, etc.), where these horses serve to train the drivers in riding.

On their heavy cold-blooded horses, which seldom trot and are never allowed to gallop, such a training, even with very limited requirements in horsemanship, would be practically impossible.

LAST YEAR'S REMOUNTS FOR THE GERMAN ARMY.

In 1907 there were brought before the Remount Commissions 27,121 remounts, of which about 50 per cent, or 13,445, were bought. Of these 23,376 remounts for *Prussian* organizations were presented and 10,817 bought, or 46 per cent. Of this number East Prussia furnished the principal part; it presented to the three eastern Remount Commissions 12,098 horses and sold them 6,409, or 53 per cent.

The Province of Hanover came next with 2,661 presented and 1,209 purchased horses, or 46 per cent.

Third stood the two Grand Duchies of Mecklenburg, which presented 2,161 remounts, of which 910, or 43 per cent, were bought. It should be remarked, however, that of these only a small proportion are self-raised in the country; most of the horses are Hanoverians, which had been introduced as sucking foals of fillies and then raised in the country. The old, renowned Mecklenburg horse no longer exists—it died out on account of false breeding. Now the Mecklenburgers devote themselves mainly to rearing.

Posen presented 1,871 horses, of which it sold 42 per cent, or 786.

The other provinces and states, including the Fourth Remount Province West Prussia and the rich horse-breeding districts of Schleswig-Holstein and Oldenburg, had less than 500 sold horses to show. The fact that these last-mentioned districts did not furnish a greater number was not due to the poor quality of their horses, but to their kind. Oldenburg and Holstein raise a coach horse, which could be used by the field artillery to be sure, but which, since the horses of the field artillery are also utilized in time of peace to instruct and train the drivers in riding, is generally too large and powerful. However, these two districts constitute an excellent source of supply for the field artillery in case of mobilization. As far as Schleswig is concerned, it raised only a medium-sized working horse, of which about sixty-five are bought annually for the heavy guns of the field army (foot artillery). The Rhine Province furnishes a like number of its Belgian-Rhenish horses.

The average price paid by the Prussian Remount Commissions in 1907 was 1,015 marks, or about $245.00. The lowest price for small Dragoon or Hussar horses was about 800 marks, or $190.50, and the highest for Curassier or artillery pole horses 1,600 marks, or $381.00.

The Bavarian Remount Commission had brought before it:

(*a*) In its own land 688 remounts, of which it bought 56 per cent, or 375.

(*b*) In East Prussia 971 remounts, of which 837, or 86 per cent, were accepted.

(*c*) In Holstein 247 remounts, of which it bought 205.

Calculated as percentage Bavaria purchased for its troops in its own land 26½ per cent, in East Prussia 59 per cent, and in Holstein 14½ per cent.

The Saxon Commission had brought before it in all 1,429 remounts, of which 959 (67 per cent) were accepted. These were furnished as follows: Eighty-one by Saxony itself; 762 by East Prussia; ten by West Prussia; seventeen by Hanover, and eighty-nine by Holstein.

Wuertemberg draws its cavalry remounts (about 250), with few exceptions, from Prussian remount depots, and remounts at home as a rule only its artillery. In 1907, Wuertemberg bought at home ninety-three horses, in West Prussia ninety-six and in Holstein sixty-three.

HISTORICAL SKETCH OF THE VETERINARY SERVICE OF THE UNITED STATES ARMY.

By Captain W. D. CHITTY, Fourth Cavalry.

AS FAR back as the authentic record of history can be traced, indications of an ancient knowledge of the veterinary science can be found. It is known that the Egyptians, Hindoos, and Arabs gave some attention to the study and treatment of the diseases of animals. Among the ancient Greeks, considerable attention was given to this subject. Hippocrates in his writings shows evidences of investigation in veterinary medicine. The works of Varro, Columella, and Galen contain references to many Greek writers, including Aristotle. Mago, of Carthage, was the author of numerous books on the subject which were later translated into Greek. In the second century are found systematic Greek words on veterinary medicine. From the third century on, the veterinary science had a literature of its own, and regular practitioners, especially in the service of the Roman armies. They were known as "veterinarii." Of these, perhaps the most renowned was Asbyrtus of Bithynia, who accompanied the expedition of Constantine against the Sarmatians in his professional capacity.

A great impetus was given to the study and investigation of veterinary medicine by Carlo Ruini, who published his work on the anatomy of the horse near the close of the sixteenth century.

Toward the end of the Mediæval period the subject received considerable attention in the cavalry schools of Italy. Other nations of Europe then began to take up the subject and in 1762 a veterinary college was established in Lyons, France. Gradually schools were established throughout Europe until today every nation is provided with well organized veterinary colleges.

The character of the work done by these colleges may be understood from that done by the Imperial Veterinary School in Vienna. This school educates for the army and for civil practice. A special course of two years in horseshoeing for privates in the cavalry and artillery is given, with a certificate of "Privileged Horseshoer."

The first regular veterinary college in the United States was established in New York in 1857. At the present time a large number of excellent veterinary colleges exist in the United States, principally in connection with the various state universities. Practically all of the states now provide for the office of a state veterinarian, who is charged with the duty of keeping veterinary statistics, studying epidemics, and exercising general supervision over state veterinary affairs. (American Vet. Review; Am. Ency.; Ency. Brit.; Hist. Vet. Med.)

In the definition of the word "farrier" in most dictionaries, evidence of the derivation of veterinary medicine may be found. A "farrier" is one who shoes horses or one having a knowledge of the treatment of diseased horses. Webster's dictionary defines a "farrier" as "a smith who shoes horses; a veterinary surgeon." Until the present year each troop of cavalry in the United States Army was authorized to have "two farriers and blacksmiths," the word farrier in this instance having the signification of "veterinary surgeon." By recent orders of the War Department (1908) this has been changed so that each troop now has one farrier and one blacksmith.

The first domestication of the horse to the uses of man antedates history. Back to that dim and indistinct period whose history is written only in a few rude models or drawings in stone, the horse has ever been the silent and faithful servant of mankind. Before the invention of horseshoes, the amount of work which the horse could perform was limited by the endurance of the horny sole of the foot. Under the weight of burdens and the wearing effect of rough roads, the hoof was rapidly worn away and the horse became lame. Then appeared the horseshoer, whose vocation of necessity required some knowledge of the horse's foot and its treatment in case of lameness. Observation and experience developed the farrier, whose knowledge and skill in the treatment of horses was gradually extended

to include other animals, until finally after many years of study, investigation, and classification, the scientific veterinarian was developed.

Naturally the most serious demand for an efficient veterinary service arose with the organization of large bodies of mounted troops, the efficiency of which depended very largely upon the condition of the horses. The Romans learned this early and employed "veterinarii" in order to maintain the horses of the cavalry in the best condition. An efficient veterinary department is now an important part of every European nation which maintains a force of cavalry.

It is only in recent years that the United States Army has been provided with an efficient and effective veterinary service.

In the early part of the Revolutionary War, the only mounted troops consisted of a few partisan volunteers having only a semi-military organization. Later in the period of the war, the First, Second, Third and Fourth Regiments of Continental Dragoons were organized either wholly or in part. There was also a First, Second and Third Regiment of Legion Cavalry organized. The horses in these regiments, as well as in numerous partisan cavalry forces, were owned usually by their riders, upon whom fell the responsibility for their care and treatment in case of injury or disease. The record of the organization of the various troops of these forces so far as known made no provision for farriers or blacksmiths. Provision was made early in the war for a "corps of artificers" to be composed of carpenters, blacksmiths, etc., to be employed by the Quartermaster General (Hist. Gen. Staff), but no mention is made in the records of the manner in which the blacksmiths were used. The attitude of the Government on this question may possibly be inferred from a resolution of Congress of 1779, which provided "That the Quartermaster General be empowered to allow and pay for a wagon, driver, and four horses, thirteen and one-half dollars, one ration and forage per day; shoeing the horses, if done at the expense of the United States, to be deducted from the wages."

From 1783 till 1785 the United States had no army, the same having been disbanded at the close of the war. A force of infantry and artillery was authorized by the act of April

7, 1785, but it was not until 1792 that provision was made for mounted troops. The act of March 5, 1792, provided for the organization of one squadron of "light dragoons," to be composed of four troops, each troop to consist of:

"One captain, one lieutenant, one cornet, four sergeants, four corporals, *one farrier*, one saddler, one trumpeter, and sixty-nine dragoons."

The farrier under this act was considered as an artificer and received $8.00 per month. A captain's pay was $40.00, a lieutenant's pay $26.00, and a sergeant-major's pay $7.00 per month.

The Act of Congress of May 30, 1796, reduced the mounted force to two troops. The same act raised the pay of the farrier to $9.00 per month.

The Act of July 16, 1798, added six troops to the two already organized and provided for a regimental organization. By this act the pay of farrier was raised to $10.00 per month.

On March 3, 1799, the army was increased, two additional troops being assigned to the dragoons. Some confusion of terms with reference to farriers and blacksmiths exists in this act, provision being made for "ten blacksmiths" (one for each troop), while no designation of farrier is expressed. The same act, however, makes no provision for the pay of blacksmiths, but does provide that the pay of farrier shall be $10.00 per month. The character of the farriers of the period may be justly inferred from this interchangeable use of the two words. There is nothing to show that the farriers were anything more than blacksmiths with such knowledge of the diseases of the horse as the average blacksmith would have.

The increase in the armed forces of the country referred to seems to have been made in anticipation of war with France. The friendly relations of the two countries having been restored, the peace establishment was reduced to "one regiment of artillerists and two regiments of infantry."

By the Act of April 12, 1808, five regiments of infantry, one regiment of riflemen, one regiment of light artillery, and one regiment of dragoons were added to the regular establishment. The troops of the dragoons had the same organization as those last disbanded.

The Act of Jan. 11, 1812, added a regiment of cavalry to the regiment of dragoons already organized and changed the organization of troops to provide for * * * one farrier and one blacksmith for each troop.

In the Act of March 30, 1814, the mounted force was again reduced to one regiment for which there was provided "one principal farrier."

The year following and upon the termination of the war with Great Britain, the army was again reduced and the mounted troops disbanded. With minor changes this organization was maintained until June 15, 1832, when a battalion of mounted rangers was authorized for the defense of the frontier. Before the organization of this force was completed, however, it was transformed by the Act of March 2, 1833, into a regiment of dragoons, each company of which should consist of:

"One captain, one first lieutenant, one second lieutenant, * * * four sergeants, * * * four corporals, two buglers, one farrier and blacksmith * * *."

In this organization of a troop therefore the offices of farrier and blacksmith are merged in a single individual.

The Army Regulations of 1835 required inspectors to see that "veterinarians" perform their duties. This is the first known use of the term "veterinarian" in the official records of the army. Inasmuch as there were no veterinarians in the army at the time, it is probable that the regulation refers to farriers.

At various times previous to May 4, 1861, the mounted forces were increased until at that time the regular cavalry consisted of six regiments. The Act of July 29, 1861, changed the dragoons, mounted riflemen, and cavalry, all into cavalry. The organization meanwhile was the same as that of the first dragoons with a few changes.

The Act of July 29, 1861, provided for a "veterinary sergeant" for each battalion of cavalry, and two farriers for each troop. No provision was made for a blacksmith.

The following year the organization of the cavalry was changed, the office of "veterinary sergeant" being abolished and the regiment being provided instead with "one chief farrier or blacksmith," and the two farriers provided by the Act of July 29, 1861, being changed into "two farriers or blacksmiths."

The office of "chief farrier or blacksmith" was abolished by the Act of March 3, 1863, and it was provided that:

"Each regiment shall have one veterinary surgeon with the rank of regimental sergeant-major, whose compensation shall be seventy-five dollars per month."

The waste of horse flesh that took place during the early part of the war was enormous. Volunteer cavalry regiments were dismounted by order of the President as a punishment for neglect of their horses. (Mil. Laws U. S.)

The Quartermaster General's report for 1862 contains the following comments on the extravagant expenditure of horses:

"Ignorance and carelessness of raw soldiers waste our horses. * * * After every battle and considerable march great numbers of horses are turned into the depots as disabled, and urgent requisitions are made upon the department for remounts, as essential to the efficiency of the troops."

Later it was stated by the same authority:

"As the cavalry has improved in discipline and knowledge, it is believed the horses last longer."

Nevertheless the great loss of horses was again pointed out in the following statement:

"During the first eight months of the year 1864 the cavalry of the Army of the Potomac was supplied with two remounts, nearly 40,000 horses." (Carter's "Horses, Saddles and Bridles.")

Some idea of the expense attached to the maintenance of cavalry of the kind principally employed during the rebellion may be obtained from the letter of General Halleck to General Grant dated February 13, 1865, in which appears the following statement:

"Expense of cavalry in horses, pay, forage, rations, clothing, ordnance, equipments, and transportation, $125,000,000, is certainly a large sum for keeping up our cavalry force for one year." (Carter.)

As to the part which an efficient veterinary force might have performed in preventing this extravagance, the following is quoted by Schwarzkopf from Turner:

"During the latter part of the Civil War, President Lincoln, hearing much complaint about the losses in the army from sick and injured horses, had offered commissions as lieutenants to several of the best qualified veterinarians of that day's time, but they refused to accept unless they were given the rank of captain."

In order to meet the enormous demands made upon the Quartermaster's Department for remounts, a Cavalry Bureau was organized by G. O. 236 War Dept., 1863, for the purchase and training of new horses and the care and recuperation of sick and injured horses, as well as the training of cavalry recruits. At this time there were but six veterinarians in the army.

"The deficiency in number was somewhat relieved by the Quartermaster's Department, which employed additional civilian veterinary surgeons for the Cavalry Bureau, and they were put to work at all the large remount depots, notably at Giesboro Point." (Schwarzkopf.)

The veterinary surgeon provided for in the Act of March 3, 1863, was enlisted and had the rank of regimental sergeant-major. (Army Register, 1871.)

"Four new cavalry regiments, the Seventh, Eighth, Ninth and Tenth, were added to the regular establishment by the Act of July 28, 1866." (Rev. Stat.)

It was provided that these regiments should have the same organization as those already organized

"With the addition thereto of one veterinary surgeon * * * whose compensation should be one hundred dollars per month." (Rev. Stat.)

The first six regiments were left with the one veterinary surgeon which the law provided.

"The War Department had proposed six additional veterinary surgeons for the first six cavalry regiments, stating that such action would be economy to the army; but this proposition was assailed by congressmen who were not favorably inclined." (Schwarzkopf.)

The additional veterinary surgeon authorized by this bill (1863) was held to be a citizen employed. (Army Register, 1871.) They were allowed the quarters and fuel allowed to a sergeant-major, but were not entitled to either clothing or ra-

tions; they were, however, allowed to purchase supplies from the commissary. (Adjt. Gen., Mch. 18, 1864, and June 16, 1871.)

General Orders No. 259, 1863, provided that the veterinarians authorized under the Act of March 3, 1863, should be selected by the Chief of the Cavalry Bureau upon nomination by the regimental commanders who were to base their nominations upon the recommendation of a regimental board of three officers next in rank to the regimental commander. The name of the person so selected was then to be submitted to the Secretary of War for appointment.

Notwithstanding the elaborate process devised by the War Department for the appointment of veterinary surgeons, it appears that the results were unsatisfactory.

In a pamphlet entitled "Defects of the Present U. S. Army Veterinary Service," by Veterinary Surgeon Treacy, published in 1885, the following comments are made:

"The present position of army veterinarians, their low relative rank, poor pay, utter want of prospects, promotion, pension for long services, injuries or wounds, to which their professional duties render them so liable, is such as to deter respectable, efficient, or talented professional men from entering, or, having entered, remaining in the service. * * * Appointments as army veterinarians are in the hands of regimental commanders. From idiosyncrasies, difficulty of retaining veterinarians, etc., cavalry regiments composed of animals valued at $150,000 are frequently, for long periods, without professional assistance, often resulting in serious losses of public animals."

With reference to the unsatisfactory condition of the veterinary service at this time, Veterinary Surgeon Schwarzkopf in his paper entitled "Historical Sketch of the Veterinary Service of the U. S. Army," says:

"It is well known that for a number of years the great majority of them (veterinarians) * * * came either from the ranks of the former farriers of the army, or were men appointed from civil life without any other qualifications than those they themselves professed to possess."

In G. O. 73, 1868, the War Department announced that Mr. Alexander Dunbar, Veterinary Surgeon, had been employed

"to give instructions to the farriers, veterinary surgeons, and officers of the army." It appears that Mr. Dunbar claimed to have discovered a mode of treatment of the diseases of the horse's foot. Lectures were to be given in Washington and at the larger cavalry posts.

General Orders No. 36, 1879, provided an excellent table of veterinary supplies and prescribed regulations for the veterinary service of the army, defining the duties of veterinarians and providing for the instruction of farriers and enlisted men in the treatment of horses; and especially of the diseases of the foot. The principles and practice of horseshoeing were also required to be taught. Another important item in the order was that providing a veterinarian's field pannier equipped with a supply of medicines for one hundred horses for three months. In this order a most important step was taken towards remedying one of the serious defects of the veterinary service in a paragraph which provided that:

"Hereafter appointments as veterinary surgeons will be confined to the graduates of established and reputable veterinary schools or colleges. They will be appointed by the Secretary of War in numbers not to exceed the legal establishment and only on the recommendations of the commanding officer of the regiment supported by the requisite proofs of learning and skill, and by approval of intermediate commanders."

An article in the American Veterinary Review (1882), by Veterinary Surgeon A. A. Holcombe, says that

"Until 1879 the orders of the War Department made it possible for anybody to become a regimental veterinary surgeon. It is not at all surprising that the Veterinary department as then established was most noted for its wonderful inefficiency and entire lack of knowledge of even the rudiments of veterinary science."

The same writer pointed out the weakness of the service due to the retention of men as veterinarians who had been appointed previous to the act requiring examinations, and who were unqualified for their duties. He also says:

"It cannot be expected that any talent will seek a position to which there is attached no rank or social position; where

promotion is impossible and compensation for the service rendered most inadequate."

It is true that regiments were at times left without veterinary surgeons, especially in the lower or "junior" grade, as is evidenced by letters of regimental commanders to veterinary colleges soliciting applications. (Am. Vet. Rev. 1885.)

Until recent years the principal burden of the care and treatment of sick and injured horses has fallen upon troop commanders. The fact of there being but two veterinarians to each regiment and the policy of the War Department in scattering the troops of a regiment among three, four, and sometimes five different stations, often rendered it impossible to secure the services of a veterinary surgeon. The inefficiency of the early veterinary service was another cause of troop commanders relying upon themselves for the necessary veterinary work of their troops. In consequence of this a considerable number of practical veterinarians were developed in every regiment of cavalry. The desirability of having officers trained at least in the elements of veterinary science led the War Department to establish a course in hippology in the School of Application for Infantry and Cavalry very soon after the establishment of the school in 1881. It has been a part of the course of instruction up to the present time.

In 1887 the Cavalry and Artillery School at Fort Riley was created by act of Congress. General Orders No. 6, 1896, prescribed Hippology, Horseshoeing, and Stable Management as a part of the course of instruction. General Orders No. 60, 1901, provided for the instruction of non-commissioned officers, farriers, blacksmiths, and selected privates in Hippology and Horseshoeing.

In 1889 provision was made for the establishment of veterinary hospitals when four or more companies of cavalry were stationed at a regimental headquarters. (General Orders No. 19.)

By Act of Congress April 26, 1898, it was provided that each battery of field artillery should have one "veterinary sergeant" and two farriers.

In the appropriation bill for the army for the same year,

authority was given the Quartermaster General to hire civilian veterinarians for service in that department.

The Army Reorganization Act of March 2, 1899, provided as follows with regard to veterinary surgeons:

"Of the veterinarians (two for each cavalry regiment) provided for in this act, one shall have the pay and allowances of a second lieutenant of cavalry, and one shall have the pay of seventy-five dollars per month and the allowances of a sergeant-major; provided, that the veterinarian appointed to the first grade shall not be so appointed until he shall have passed an examination to be prescribed by the Secretary of War as to his physical, moral and professional qualification; provided further, that the veterinarians now in the service who do not pass such competitive examination shall be eligible to the positions of the second class, under such rules as are now prescribed by the regulations."

The status of veterinarians under this act is thus determined by the Secretary of War:

"A veterinarian appointed under the Act of Congress approved March 2, 1899, is not a commissioned officer or an enlisted man, but a civil employe. A veterinarian of the second class is entitled to all the allowances and emoluments of a sergeant-major other than his pay proper, which is fixed by law, the same as if he were an enlisted man."

Under the decision of the Comptroller (Cir. 47, 1900), a veterinarian of the first class is entitled to take credit for his prior service in the army and is allowed ten per cent for each five years' service. This service included enlisted service and service as veterinary surgeons. (Dec. Comptroller 1901, and Dig. Dec. Comp.)

With reference to the status of veterinarians as to increased pay for foreign service, the Comptroller decided that:

"A veterinarian of the first class is an officer of the army within the meaning of the Act of May 26, 1900, and is entitled to the ten per cent increase of pay provided for therein for officers serving in Porto Rico," etc., etc. (Dig. Dec. Comp.)

With reference to veterinarians of the second class the decision announced in Cir. 47, 1900, denied to them the benefits of

the act which provided an increase of twenty per cent for foreign service in the pay of enlisted men.

Veterinarians of the first class under the Act of March 2, 1899, received mileage for travel under orders, the same as second lieutenants. Veterinarians of the second class received transportation requests and commutation of rations. (Cir. 27, 1900.) The baggage allowance of veterinarians of the first class was the same as that of second lieutenants; for veterinarians of the second class it was fixed at five hundred pounds. (G. O. 119, 1900.) Veterinarians of the second class were allowed $3.71 per month in lieu of a monthly clothing allowance. (G. O. 122, 1900.)

The Army Reorganization Act of February 2, 1901, gave the army fifteen regiments of cavalry and changed the artillery organization into an artillery corps, having thirty batteries of field artillery and one hundred and twenty-six companies of coast artillery. Section 20 of this act provided:

"That the grade of veterinarian of the second class in cavalry regiments of the United States Army is hereby abolished, and hereafter the two veterinarians authorized for each cavalry regiment and the one veterinarian authorized for each artillery regiment shall receive the pay and allowances of second lieutenant, mounted. Such number of veterinarians as the Secretary of War may authorize shall be employed to attend animals pertaining to the Quartermaster's or other departments not directly connected with the cavalry and artillery regiments, at a compensation not exceeding one hundred dollars per month."

With reference to the status of veterinarians under this act, a decision of the Secretary of War announced in Cir. 30, Aug. 29, 1901, was as follows:

"Veterinarians are not competent to sit as members of courts-martial or perform any of the duties which are expressly required by law to be performed by commissioned officers, however they are eligible for detail as members of boards of survey or councils of administration, and may, when no commissioned officer is available, serve as exchange officers or post treasurers and may witness payments to enlisted men."

A decision of the Comptroller based on the Act of February 1, 1901, gives longevity pay to veterinarians under that

act and authorizes taking credit for prior service either as enlisted men or as veterinarians. (Cir. 29, 1901.) While on leave of absence, veterinarians have the same status as officers with regard to pay. (Cir. 22, 1901.) They are entitled to receive the customary salute from enlisted men. (Cir. 18, 1902.) The official rank of veterinarians is below that of second lieutenants and above that of cadet. (G. O. 39, 1902.) They may assign their pay accounts after they become due in the same manner as officers of the army. (Cir. 1, 1903.) A veterinarian:

"Is appointed by the Secretary of War for an indefinite period and is discharged by order of the Secretary of War. He is required to take an oath the same as is required of commissioned officers, and is required to perform all the duties belonging to his appointment in conformity with the rules and regulations of the service. He has no regular rank but is borne on the regimental returns below commissioned officers. He is paid out of the money appropriated to be disbursed and accounted for by the Pay Department as 'pay of the army.'" (Dec. Comp. Cir. 1, 1903; Dec. Comp. Feb. 13, 1901.)

The Appropriation Act of June 30, 1902, modified the status of veterinarians with respect to increase of pay for foreign service. The act stated as follows:

"For additional ten percentage increase on pay of commissioned officers serving at foreign stations. * * *"

The first Act (May 26, 1900), providing increased pay for foreign service, did not contain the word "commissioned." The Act of June 30, 1902, further provided

"That hereafter the pay proper of all commissioned officers and enlisted men serving beyond the limits of the states comprising the Union and the Territories of the United States contiguous thereto shall be increased ten per centum for officers * * * over and above the rates of pay proper as fixed by law for time of peace, and such service shall be counted from date of departure from said states to the date of return thereto."

The Comptroller decided that under this act veterinarians were not commissioned officers and therefore were not entitled to increased pay for foreign service. (Cir. 11, Mch. 19, 1903.) Act of March 2, 1907, omitted word "commissioned." Held that veterinarians were entitled to ten per cent increase for

foreign service after July 1, 1907. (Cir. 1, P. M. G. O., Dec. 1, 1907.)

Veterinarians in the cavalry and artillery service are entitled to campaign badges under the same conditions as officers. (Cir. 22, 1905.)

By the Act of January 23, 1907, the organization of the artillery was changed into two separate branches, the coast artillery and the field artillery. The field artillery was to consist of six regiments, each of which was to be provided with two veterinarians.

The present veterinary force of the United States Army therefore consists of thirty for the fifteen regiments of cavalry, and twelve for the six regiments of field artillery. In addition to the forty-two veterinarians who constitute the regular establishment, certain other veterinarians are employed by the Quartermaster Department. These latter, however, have the status of civilian employes and are not required to comply with the rules and regulations for appointments, duties, etc., laid down by the War Department for the veterinarians of the regular establishment. (Act Feb. 2, 1901.)

With regard to the participation of veterinarians in the benefits of the Act of Congress which provided for the payment of six months' pay to certain persons upon the death of an officer or enlisted man under certain conditions, it has been held that

"A veterinarian of cavalry or field artillery is entitled to the benefits of so much of the Act of Congress approved May 11, 1908, as provides for the payment to the widow of any officer or enlisted man who dies from wounds or disease contracted in line of duty, or to any person previously designated by him, of an amount equal to six months' pay at the rate received by such officer or enlisted man at the time of his death." (Cir. No. 81, W. D., Sept. 30, 1908.)

Veterinarians are not included in the enumeration of persons entitled as beneficiaries under Section 4692 Revised Statutes, known as the General Pension Law. Widows, children, and dependent relatives of veterinarians therefore derive no benefit from this law. (Rev. Stat.)

The status of veterinarians with regard to pay and allowances "as mounted officers" is thus defined by Cir. 5, W. D. 1909:

"Veterinarians of cavalry and artillery are 'officers required to be mounted' within the meaning of Paragraph 1291, Army Regulations, as amended by G. O. 149, W. D., Sept. 16, 1908, and as such fall within the provisions of Paragraphs 1292 and 1537, Army Regulations, with respect to the supply of a proper mount by the Quartermaster's Department or the additional pay allowance, and to the issue of horse equipments, and of Paragraphs 1088 and 1089, Army Regulations, with respect to the supply of forage."

Notwithstanding the fact that for many years the armies of Europe having a permanent force of cavalry have maintained efficient veterinary departments, it is only within recent years that the United States Army has been properly equipped in this regard. There are various reasons for this, one of which has undoubtedly been the indifference of the cavalry branch to any improvement in the veterinary service. For the first seventy years of its existence, the army got along without any veterinary service other than that performed by cavalry officers and troop farriers and blacksmiths. Under the strain of war conditions, and the employment of large bodies of volunteer cavalry during the Civil War, it was found that the cavalry was being ruined by the ignorance of officers and men in the matter of caring for their horses. The necessity of an efficient veterinary service was apparent, but the resulting legislation looking to the adoption of means to rectify the evils was inadequate. For many years after the war, many of the so-called veterinarians in the cavalry were former troop farriers or blacksmiths, or individuals having even less claim to a knowledge of veterinary medicine. Hence the contempt and indifference which was formed in the cavalry service for the veterinary work of the army. Not all of the veterinarians of this period were inefficient, however, for among them were men, some of whom are still in the service, of ability in their profession. These men also understood the conditions existing in the service and deplored them.

Until the passage of the law of March 2, 1899, it was difficult to obtain men of ability as veterinarians, in consequence of the inadequate pay and the social barrier which had naturally developed.

The improvement in pay and allowances provided by the Act of March 2, 1899, the higher qualifications required under this Act, and the extension of this Act in 1901 to include all veterinarians, has had the effect of bringing a better equipped set of men into the service and the natural result of a removal of social barriers.

While it is necessary that every officer of the cavalry and field artillery should have a practical knowledge of the treatment of simple diseases of the horse, the supervision of veterinary supplies, the treatment of serious and numerous cases, as well as the occasional demand for surgical work, renders an efficient veterinary service absolutely indispensable. The present organization of the veterinary service provides an adequate examination for physical, moral, and professional qualifications. There is no provision for general educational qualifications.

Most of the foreign armies provide commissioned rank for their veterinary departments, officers of this department being considered as "non-combatant officers." The British Army Veterinary Department, for example, having grades from Lieutenant up to Colonel, as well as provision for promotion and retirement. It is to be observed, however, that in the British service, the remount system, purchasing, etc., is in the hands of the Veterinary Department.

THE PRINCIPLES OF FIRE AND THE TECHNICAL AND PRACTICAL USE OF THE PRESENT RAPID FIRE FIELD ARTILLERY.

By Major JOHN E. McMAHON, Sixth Field Artillery.

IT is a curious thing to note that the appearance of the rapid fire gun in the modern system of artillery was caused by the development of the torpedo-boat. Against this new weapon of naval warfare, a weapon which moved with amazing swiftness and launched at close range a formidable projectile, a gun was imperatively needed to stop with certainty or surely cripple the small and fast moving target before it reached striking distance of the ship. When the problem of designng such a gun was faced, it at once became evident that all the difficulties lay in producing, not a rapid fire gun, but a rapid laying one. With the smoke powders then in use rapid laying was impossible; the gunner had to wait between shots for the dense clouds of smoke to pass away, and so, to meet this difficulty, smokeless powder made its appearance on the scene. Next, the recoil had to be so checked that the gun could be kept continuously laid on the target, otherwise all the time gained by rapid loading would be lost in readjusting the line of sight on the objective. With guns mounted on shipboard or in fixed emplacements on land, this latter difficulty was easily solved; but when it came to designing and manufacturing a field gun which would stand fast on all kinds of ground against the tremendous energy of recoil, the problem was a vastly different one, and it is to the everlasting glory of the French artilleryman that he first produced the weapon that has revolutionized modern field artillery and increased enormously the power of that arm.

To arrive at the true principles of fire of the rapid fire field gun it will be necessary to discuss briefly the essential properties of this gun, and from these properties to deduce the methods of

fire which will utilize to the greatest degree its advantages. The two essential properties are:

First—The power and rapidity of its fire.

Second—Its power of acting by surprise.

As regards the power of its fire, it cannot be said that the rapid fire gun is greatly the ballistic superior of the old slow-fire piece which it superseded. In a field artillery gun using shrapnel, high muzzle velocity is not desirable, because with a very flat trajectory the upper part of the shrapnel sheaf would be generally ineffective against troops in trenches or in any way sheltered; moreover, any great increase in muzzle velocity seriously complicates the problem of checking the recoil and raises at once the specter of increased weight to be hauled by the horses. It may also be noted that it is worse than useless to employ the fire of field guns at ranges greater than those at which the effects of their fire can be clearly observed. The above considerations, then, limit the power of a field gun by prohibiting the use of a muzzle velocity greater than about 1700 f. s., which fixes its maximum effective range, all things considered, as about 6000 yards.

By a combination, however, of moderate ballistic efficiency and great rapidity of fire the new type of field gun has been made a weapon greatly superior to the old. This superiority results from both physical and moral causes. The fire of modern rapid fire field artillery not only inflicts heavy losses upon troops exposing themselves in the open, but inflicts these losses *in a very short time*. It is a fact proved by the bloody experience of many battle-fields that the best troops will quietly endure heavy losses spread over a considerable period of time, but the same troops will become badly shaken and often utterly demoralized, if they see hundreds of their comrades struck down in a few brief moments by a veritable hail of death. It is too much to demand of human nature, hardened though it be by discipline and the harsh school of war, to retain its morale under such a calamity or to again face with a calm spirit the dread realities of the battle-field until time has softened the recollection of the ordeal through which it has passed.

The second characteristic of the rapid fire field gun—its power of acting by surprise—results from the possibility of

using more accurate and delicate pointing instruments, which are not affected by the shock of recoil. These instruments permit the use of indirect laying, and the consequent delivery of fire from a masked position. By their use a battery commander can prepare his fire in advance, and by a careful registration of fire on the prominent points in the sector assigned to him, can strike almost instantaneously all objectives appearing in his zone. These instruments also make it possible to swing the sheaf from one target to another by merely making a numerical change in the deflection, instead of having to indicate to the gunners, as was necessary with the old material, the nature, location and relative position of the new objective. This second characteristic also adds to the moral effect of field artillery fire, because the nerves of the average man are more apt to be shaken by a fire coming, as it were, out of the void, than by a fire delivered by an enemy whom he can plainly see and upon whom his own fire is producing perceptible effect.

From this brief consideration of the essential properties of the rapid fire gun we may deduce the methods of fire to be employed. From what precedes it may safely be assumed that the gun is capable of delivering a rapid and overwhelming fire against targets appearing within a range of 4000 yards; from this it naturally follows that troops are going to expose themselves to this fire only for the shortest possible time and then only in widely deployed formations. The target, then, has these two characteristics: it will be vulnerable only for a brief period, and it will be, in general, broad and deep. Against such a target we must use a method of fire which will enable us to cover a zone almost instantaneously with a hail of bullets, and hence arises the necessity for the method which the French have well termed a "rafale." In our Drill Regulations the rafale may be delivered by volleys at successive ranges or by zone fire; the latter is used only when the opportunity is a fleeting one and the target, if struck at all, must be struck at once. It is to be noted here that the covering of target in width is made possible by the fact that the gun can be moved in azimuth on its carriage without displacing its trail, from which arises the modification known as sweeping fire. In zone fire with sweeping, one rafale will cover a sector about 500 yards long by 200 yards

wide; with continuous fire or volley fire sweeping, any width of front may be covered, depending upon the number of rounds used in the sweep.

There are other artillery targets, however, than those presented by troops appearing momentarily in view on the battle-field. Artillery in position in the open or behind a mask, troops in trenches, troops lying down in the open that are held in temporary check or awaiting a favorable chance to advance—all these will demand the attention of the guns. To attack such targets we may use continuous fire, with intervals between shots dependent on the will of the officer conducting the fire, volleys at single ranges and oftentimes volleys at successive ranges. Again, when the guns are threatened by the close attack of cavalry or infantry, a wall of fire must be quickly formed, through which the enemy must be forced to pass before he can reach the battery; to meet this emergency we have "fire at will."

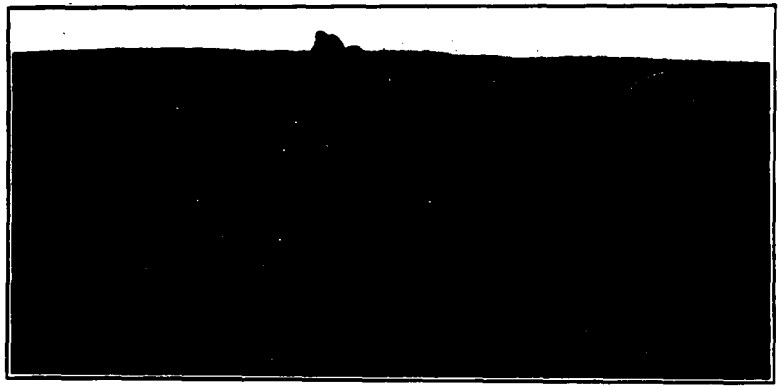
In the foregoing paragraphs the advantages of the rapid fire gun have been described; it now remains to say a word about its defects. As the French say, it has the defects of its qualities; rapid fire means heavy consumption of ammunition. A single rafale of zone fire with sweeping, delivered in a minute and a half of time, expends forty-eight rounds, there is practically no limit on the number of projectiles that may be used in volley fire. In the Manchurian war—in which the real rapid fire gun, as now understood, played but a small part—one Russian battery used up 4,800 rounds in one day; another expended in the same time its whole allowance for the campaign. Of course, if all the batteries of an army were as prodigal as the two quoted above, no human power could keep such an army supplied with artillery projectiles. For this reason it will not be possible for modern field artillery, under the most favorable conditions of ammunition supply, to keep up the continuous fire whose roar is such a welcome sound to our brothers of the infantry. Intermittent bursts of fire will be the rule; but the infantry and cavalry soldier must learn to realize that a silent gun is not a beaten gun, and that its temporary silence means only increased fire effect and more strenuous help at the time when such help is most sorely needed.

To lay down rules for the tactical use of the rapid fire gun is no easy task in such a brief article as this is intended to be. The one basic principle upon which the tactics of modern field artillery are founded is this: it should make the utmost effort to give adequate and timely support to the infantry. The infantry is the main factor in the battle; if it is not successful, the battle is lost. To give this support artillery must be prepared to exert itself to its utmost, to sacrifice itself cheerfully, whenever such sacrifice will make the hard task of the infantryman easier or will turn the tide of victory to our side.

As regards the formation to be adopted on the battle-field, it is now generally acknowledged that it is no longer advantageous to mass the guns in one continuous line, as was done by the Germans in the Franco-Prussian War. Dispersion of units with concentration of fire is now the normal rule. This is made possible by the mechanical construction of the guns themselves, by the flexible methods of fire available and by the greatly improved means of communication now used with field artillery. As to the number of guns to be used as at one particular point, there are two different opinions. The French maintain the theory of the economy of forces; that if one battery is sufficient to dominate a hostile battery, it would be foolish to use two, and that only such number of guns should be employed as will be necessary to exactly perform the task assigned them. The Germans, on the other hand, maintain that all the guns available should be put in, in order that superiority of fire may surely be obtained and the enemy's guns may be dominated in the shortest possible time. There seems to be no good reason to suppose that the old saying about Providence and the strongest battalions does not apply to artillery, as well as to infantry. It would appear, also, that the French have lately undergone a change of heart on this subject, for by a recent decree of the Minister of War 128 batteries have been added to their field artillery.

The introduction of the shield, which protects the gun detachment from shrapnel fire at all ranges and from small arms' fire up to 150 yards, has had an important effect upon the tactics of field artillery. In the first place, in conjunction with the use of masked positions, it has caused the disappearance of the

artillery duel with which formerly all battles were begun. Artillery which finds itself subjected to a dominating fire from the enemy's guns will shelter its personnel behind the shields and await a favorable opportunity to reopen fire; infantry in trenches or behind cover will protect itself against shrapnel fire by lying hidden until forced to expose itself in order to resist a threatened attack. Instead of waiting, as it formerly did, until the artillery duel has been decided by hours of continuous fire, the infantry of the attack must now move forward at the beginning of the engagement, in order to force the enemy's guns to open fire and thus disclose their position, and to compel the hostile

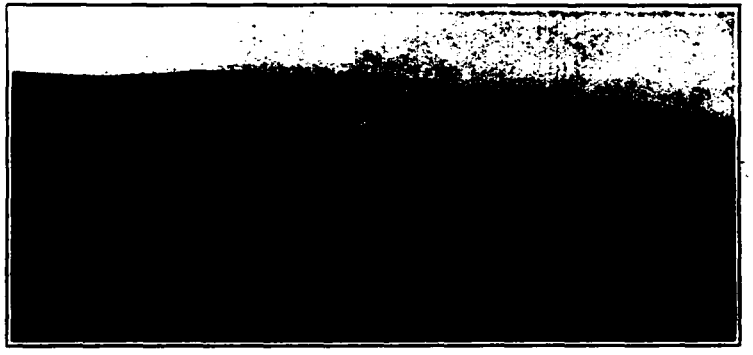


THE 3-INCH GUN AT THE MOMENT OF FIRING.

infantry to man its trenches to resist the threatened advance. In other words, the action of the artillery and infantry will be reciprocal; the latter by its advances will cause the artillery targets to appear, and the artillery will then endeavor to cause these targets to seek shelter again, in order to permit the infantry to advance. Again, since the shield protects the cannoneer against close range infantry fire, artillery, once in position, can in general keep its guns in action under the heaviest kind of rifle fire; the getting into position, however, under such a fire, and the getting out again, are quite another thing.

As to what targets should be principal objects of the artillery's attack, it is now the general rule that the main effort should

be directed against such parts of the enemy's forces as threaten most our own infantry. If the hostile guns are preventing the advance of the infantry, the fire of these guns must be silenced or rendered less effective: this done, a number of batteries will be detailed to watch the opposing artillery, while the rest of the guns will concentrate their fire on the enemy's infantry and support to the utmost the advancing lines of their own troops. If the necessity arises, batteries must be sent forward to take position for close attack, to help the infantry out of a tight place or to sacrifice themselves freely for the capture of a key point on the enemy's line. In this connection it should be remarked, that recently statements have appeared in print claiming that the

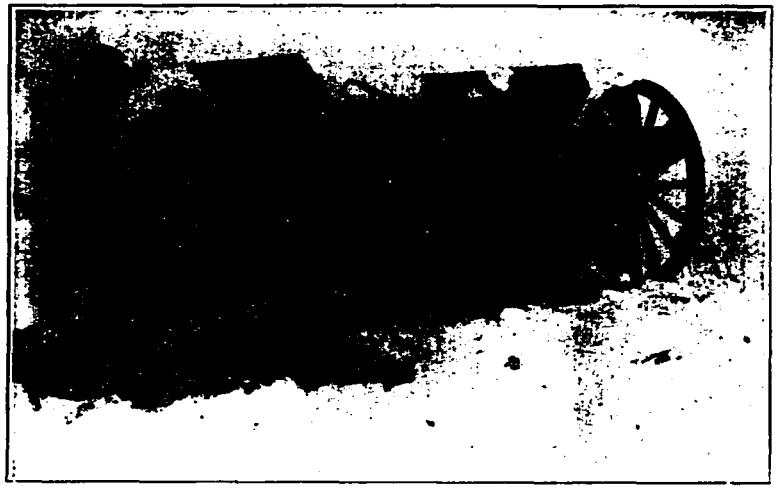


A BATTERY IN POSITION FOR MASKED FIRE.

Drill Regulations of certain armies require batteries to accompany the infantry skirmish line in the attack. As a matter of fact, no such provision exists in any modern army. Batteries on the skirmish line would be only in the way; they could not advance a hundred yards under close range infantry fire, and if they succeeded in unlimbering under such a fire—which is highly improbable—they would never move another yard until the infantry of the defense had been driven out of their position. Batteries will, no doubt, be sent forward for close attack, but it will not be for the foolish purpose of gaining 500 or 1,000 yards in range; it will be done, for example, when there is a position close to the enemy's line from which a flank fire may be delivered,

his trenches partially enfiladed or from which an effective fire may be opened against the counter attack.

Before closing this brief summary of the technical and tactical properties of the modern field gun, one thing remains to be said. All the advantages of this new weapon will be sacrificed by a combination of a rapid fire field gun and a slow fire battery, battalion or regimental commander. A battery of rapid fire field pieces has been well compared to a hose from which a stream of fire may be delivered in any direction and in any desired volume; but the effect of this stream of fire will be sadly decreased if the



FIRING IN THE SNOW.

hose be held by an ignorant, careless or vacillating hand. A battery commander who is not able to develop to the utmost the possibilities of the weapon that he uses, who is not trained to the limit in the technique of his arm, had better, for his own sake and for the sake of the country he is supposed to serve, turn in to the arsenal his rapid fire guns and go back again to the old material; for with that material he will not, at least, waste thousands of rounds of valuable ammunition. He should also remember that, in the modern system of conduct of fire, the pace of the whole

is the pace of the slowest element; that one ignorant, careless or bungling cannoneer can so delay the delivery of fire as to seriously cripple the efficiency of the battery and permit the escape of a target that might otherwise have been destroyed. This means that the first necessity of a modern rapid fire battery is training, and training that is continuous, thorough, and, above all, inspired by a just pride in our arm. Influenced by the teachings of the Manchurian War, our comrades of the cavalry and infantry have come to expect much of us on the field of battle; indeed, it may almost be said that, misled by the long-range observations of certain enthusiastic war-correspondents, they have come to expect too much. Be that as it may, the one certain thing is that in our next war the field artillery *must* make good; no excuses as to lack of training due to limited maneuver grounds or lack of officers or want of time will avail. It is, therefore, the paramount duty of all field artillery officers to so train themselves and their men in time of peace that, when the crisis comes, we may not be humiliated in the eyes of the rest of the army and that the good name of the field artillery may not be tarnished.

MACHINE GUN EXPERIMENTS, ETC.

(The Army Orphan.)

By First Lieutenant ALBERT E. PHILLIPS, Tenth Cavalry.

IN preparing the Machine Gun Platoon of the regiment for the military meet of the Department of Luzon, 1908, advantage was taken of the provisions of G. O. 102, W. D. 1908, which authorizes the expenditure of additional ammunition in experimental firing to train the personnel to thoroughly master the idiosyncrasies of the Maxim gun and to confute the fallacious idea that anyone, without hard study and patient experiment, can effectively handle the weapon.

The consequent success in direct and indirect fire, in its concentration, distribution, and rapidity of delivery, as well as promptness in going into action, will alter, somewhat, the impressions created by Col. Parker's recent test of two machine guns against a platoon of cavalry sharpshooters.

In the test referred to, the conclusions drawn by Col. Parker, among others, were:—(1) "That the test indicates average results, and that under ordinary circumstances the fire of a platoon of cavalry numbering twenty-two men would be superior in effectiveness of fire to the Machine Gun Platoon." "The cavalry went into action more quickly than the Machine Gun Platoon and at a range of 1000 yards fired as many shots in the same space of time and made four times as many hits on the 'L' target."

It is rather difficult to conceive how the Colonel's test indicates average results, when the Machine Gun Platoon which competed had fired but 1,700 rounds in two seasons, and the platoon of cavalry was composed of sharpshooters.

1,700 rounds in two seasons is not sufficient to teach the personnel the rudimentary principles of handling the Maxim.

And surely sharpshooters are not the average soldiers in our troops. 1,700 rounds can be fired by the two machine guns of a platoon in a "minute and a half."

We shall now describe a test which, it is believed, more nearly indicates average results.

EXERCISE.

One Maxim Machine Gun to fire at the collective fire target "L," using average number of rounds at each range as fired by the squadron to which the platoon is attached, during the regular practice for 1908.

EXERCISE.

Average number of men of squadron firing 41½	Average number of rounds fired 750	Average number of hits 429					Collective figure of merit 57.09	
One Maxim Machine Gun.	Rounds Fired 750.	Range	Hits				Percentage. 79 54	Percent. in favor of gun 22.45
			L	K	S	Total		
		600	42	99	110	251		
		800	27	61	90	178		
		1000	24	66	82	172		
		.....	93	226	282	601		

The collective figure of merit for the Philippines Division for 1908 is 55.18.

The troops were armed with new rifles and fired the new sharp-pointed bullet, while the machine gun used the old model ammunition and a barrel which had been fired through at least 7,000 times. The gun squad had had no previous practice at the collective fire target and the gun was fired by different men at the several ranges. The collective fire is "slow-aimed fire," while the fire of the machine gun was "rapid-continuous" for the number of rounds at each range.

The troops are allowed one minute in the "fire at will" and no time limit for volley firing. As no attempt is ever made to rush the volleys through, we may assume two minutes as the average time of firing both classes of fire at each range.

The Machine Gun consumed 30 seconds to fire its 250 shots at each range; or one-fourth that of the troops. There were no interruptions or jams; the fire was continuous as the time indicates, and the gun was kept constantly on the target without discontinuing the fire to relay it.

With additional practice at the collective fire target "L," using barrels chambered for the sharp-pointed bullet, it is believed the figures in favor of the gun would be greater.

We shall now consider the time taken by Col. Parker's Machine Gun Platoon and his platoon of cavalry to go into action.

The former took "one minute and ten seconds," and the latter, "thirty-three seconds."

The average time for a well-trained cavalry gun platoon to go into action front, *i. e.*, from mounted formation, unpack and set up gun, load, aim and open fire, is 25 seconds.

In the Department Meet for 1908, the machine gun platoon of the Tenth cavalry, from halt, in line, moved forward in section column at a gallop for 200 yards and went into action and fired a blank shot in 31 seconds.

In the Division Meet, with the gun squads dismounted, the guns were unpacked, set up, a blank cartridge loaded and fired, the guns taken apart to exchange barrels, then put together, reloaded and fired the second time in 26 1/5 seconds, both guns firing practically simultaneously. All pins were put in in their proper places.

It is submitted that a troop of cavalry in column of fours cannot dismount and form skirmish line to the front, set sights at range ordered, after dismounting, load and open fire as quickly as a well-trained cavalry machine gun platoon and make as many hits on the "L" target in the same period of time. Any range.

In contrasting Col. Parker's test we note: (2) "Each of the two machine guns fired 250 rounds." Our one machine gun fired the same number of rounds. (3) "The average time of fire of each of the two machine guns was three minutes and thirty seconds, deducting interruptions." Including interruptions, we have, according to the Colonel's table:—"Gun No. 1, eight minutes. Gun No. 2, five minutes and thirty-five seconds."

In our test, firing at the same target and range, the gun took 30 seconds. There were no interruptions.

(4) "The average rate of fire of the two guns was 143 rounds per minute of firing." The average rate in our test was 1,000 rounds per minute of firing, for the two guns.

(5) "Number of hits per minute of firing, 15." As our gun consumed but 30 seconds to fire the 250 rounds and made 172 hits, the rate per minute would have been 344.

We shall now contrast the work of the 17 sharpshooters. They fired "140 rounds in one minute of firing and made 58 hits in that time." Our one machine gun averaged 500 rounds per minute and made 172 hits in one-half minute, or 172 to 29; practically six times as many.

The deduction is, then, that in effectiveness of fire at a group target at one thousand yards, one Maxim gun is equivalent to 102 sharpshooters, and both guns of a platoon to 204 sharpshooters; or to a fraction over three troops of cavalry, composed entirely of sharpshooters, providing all horseholders could be put in the firing line. If we allow one horseholder to each set of fours, then our comparison must be with four troops of 65 men each.

It is admitted that a cavalry machine gun platoon costs more than a platoon of cavalry, but would it not be more reasonable to make the comparison with a troop of cavalry, considering we have just proved its effective adequacy with four troops?

EXPERIMENTS IN DIRECT FIRE.

Several writers have stated, "That indirect fire is not possible with machine guns." Col. Parker said: "The machine gun in the attack of a position cannot be used in front of the skirmishers or firing line, for it will suffer from their bullets." This is admitted. "It cannot be used in rear of these skirmishers, for they will suffer from its bullets."

We shall now see to what extent the skirmishers in front would suffer:

To determine how many, if any, of the bullets from the machine gun would strike the troops in front, or an assumed "hill" over which the gun was to fire, canvas frames were used

to represent such objects, the targets thus being concealed from view. The target at the butts was G. 3, described in G. O. 102, W. D. 1908. "It consists of a strip of target cloth 6 feet high and fifteen yards wide, along the bottom edge of which is pasted a row of 15 kneeling figures with an interval of one yard from center to center. Across the target and parallel to its top edge will be drawn a narrow black line tangent to the tops of the heads of the figures. Value of hits on any figure, 5; on the cloth below the line 3; on the cloth above the line 1."

FIRST EXERCISE.

Range.	Obstruction.	Shots.	5's	3's	Figures Hit.	Hits.	Percentage.
800 Yards.	Canvas frames 8 ft. high, 200 yds. in front of gun.	Rapid Fire.					
1st trial		30	10	12	5	22	73.33
2d trial		30	10	9	5	19	63.33

In this exercise the line of sight was five feet below top of obstruction. All shots over.

SECOND EXERCISE.

Range.	Obstruction.	Shots.	5's	3's	Hits.	Percentage.	Figs. Hit.	Percentage of figures hit.
1000 yds.	Canvas frames 8 ft. high, 200 yds. in front of gun.	Rapid Fire.						
1st trial		30	11	4	15	50	9	60.
2d trial		30	17	7	24	80	12	80.

Line of sight three feet below top of obstruction. All shots over.

THIRD EXERCISE.

Range.	Obstruction.	Shots.	5's	3's	Hits.	Percentage.	Figs. Hit.	Percentage of figures hit.
1200 yds.	Canvas frames 12 ft. high, 200 yds. in front of gun.	Rapid Fire.						
1st trial		30	2	5	7	23.33	2	13.33
2d trial		30	5	3	8	24.66	4	26.66
3d trial		30	11	9	20	66.66	8	53.33

Line of sight seven feet below top of obstruction. All shots over.

It will be observed that no "one's" were made.

Assuming the height above ground of the average mounted soldier as 8 feet, had a troop of cavalry, mounted, been 200 yards in front of the machine gun, in the third exercise, the line of sight would have struck about the backs of the horses and all bullets would have gone over the riders with at least four feet to spare, as proved in this exercise, and with 10.94 feet to spare according to the ordnance table. (The ordinate of trajectory above line of sight for range 1,200 yards,—200 yards in front is, 15.94 feet for 1903 ammunition.

The troop, mounted, could have moved forward to within 100 yards of the target and would not have been hit by bullets from the machine gun.

The results achieved not only show that dismounted skirnishers would not suffer, but that indirect fire is possible, and that machine gun fire will be most effective when it is delivered from cover and takes the enemy by surprise.

The main contentions in all machine gun fire are that, control, direction, and concentration are facilitated, while no commander of men using rifles can control the fire of each individual soldier of his command.

Col. Parker said: (6) "That a single rifle bullet would wreck a machine gun, and that two bullets 'properly placed' would put the entire platoon out of action." It would be interesting as well as instructive to all officers on duty with the Maxim guns if they would be told where the vulnerable spot is located.

It can be shown that a few bullets or a single shell or shrapnel "properly placed" would put a troop or company out of action.

(7) "The machine gun platoon is more exposed to hostile fire than the platoon of cavalry."

Major Kuhn, who was an observer with the Japanese army in Manchuria, reports: * * * "Importance is laid on concealing the guns, and it was claimed that none had been knocked out by the Russian Artillery."

Lt. Col. Bird, of the School of Musketry, Hythe, England, in "Machine Gun Tactics," states: * * * "Once concealed, the very narrow frontage it occupies, should in spite of the peculiar noise it makes in firing, render it difficult to locate. Its narrow frontage, also, makes it particularly useful to bring a heavy fire to bear from ground which does not admit of the deployment of troops."

Even presuming that a machine gun is difficult to conceal, how much more difficult is it to conceal a whole troop of cavalry?

The tripod need not always be used in firing and the gun can be concealed as easily as the prone skirmisher.

(8) "The machine gun will add infinitely to the difficulty of solving the question of ammunition supply." * * "Where are we going to find cartridges to supply this weapon, filling the circumambient atmosphere with bullets?"

No greater difficulty will be encountered in supplying ammunition to the machine gun than to the troops using rifles.

The machine gun is, in fact, a weapon not for general employment, but for use on special occasions, when its timely intervention may be decisive. Its fire can be concentrated on any desired object or point with much less wasting of ammunition than could be obtained with rifle fire.

If we may accept the reports of the war in Manchuria, a machine gun does not require as much ammunition as a company of infantry of one hundred men.

(9) "One is reminded of the talk about mitrailleuses at the beginning of the Franco-Prussian War. 'Why, the Prussians have not a chance,' said the French, 'we will sweep them from the earth with our mitrailleuses.' And in a short time the Prussians had a park of over 900 mitrailleuses captured from the French."

The machine gun of today is a weapon quite different from the "mitrailleuses" used by the French in 1870. Prussia won that war and captured a number of those weapons. Japan won from Russia and captured machine guns; but the Russians did not capture any from the Japanese.

A prominent English cavalry officer, in writing of the use of machine guns by the Boers, said: "Their use by the Boers was most noticeable, the fact, so much commented on at the time, that, even long after the capture of Pretoria no single machine gun had been captured by us except one or two that were abandoned by them as damaged beyond repair, is due largely to the way in which their retreat was covered by machine guns, especially the 'pom-pom,' which, brought into action at any range up to 6,000 yards, was usually the last to leave, and could do so at a pace which gave our mounted men no hope of capturing it."

(10) "Take into account that the range of the machine gun is less than that of artillery, and that the machine gun is helpless under the fire of artillery at artillery ranges."

It was never contemplated that machine guns should contend against artillery at ranges beyond the capabilities of the weapon, nor against artillery in position, protected by intrenchments. The range of the Russian field gun was greater than that of the Japanese, yet the Mikado's soldiers managed to push their artillery within range and "out-shoot" the Russians.

In the "Report of the Santiago Campaign," Wagner, recently published, we note: "The part played by the artillery was very disappointing to the army. * * * Much disappointment was felt throughout the army at the inefficiency of our artillery. * * Tactically, the artillery showed a disposition to fight at long range. * * * The services of the Gatling battery were conspicuous and of great value."

For the sake of brevity, we must not discuss all the questions submitted as to the comparative value of machine and mountain guns. The heavy, cumbersome loads packed by the mules of mountain batteries prohibit such batteries accompanying fast-moving cavalry.

At the battle of Liao-Yang, a Russian Machine Gun Battery opened fire on a Japanese Mountain Battery at a range of about 900 meters, "ranging was not thought of." Quoting the Russian Commander: "As soon as we began firing the battery obliqued to the right toward a denser part of the 'kowliang,' but it was too late. Every living and moving thing fell under the rain of bullets. The machine guns had fired 6,000 cartridges, but the importance of the target justified the expenditure. I ordered the fire to cease '*one minute and a half*' after it opened, because there was no longer an objective to fire at."

In confining ourselves to the use of machine guns in the late war in the Far East, and to the reports of our observers and officers of the contending armies, it might be interesting to quote the remarks on machine guns in that excellent little pamphlet, "Actual Experiences in War," by Capt. L. Z. Soloviev, 34th East Siberian Rifles. "In speaking about the present war it is impossible to pass over unnoticed this new weapon, which in a short time has shown itself to be the most deadly invention of military ingenuity. These are machine guns. First used at Turenchen, they were extensively employed in all the following battles. Light, mobile, occupying but little room, requiring not too much cover, they are easily carried by horse or man to the steepest summits inaccessible to artillery, and open from these points of vantage their well aimed and deadly fire. Easily manipulated, they soon find the range of the target, and once having found it follow it uninterruptedly. It is possible to leave the zone of artillery fire by moving to one side for several hundred paces.

"It is more difficult for a battery to change its aim and direction when the target is moving briskly, but the machine gun changes easily and rapidly the direction of its sheaf of bullets, literally covering the chain with them. A column falling under the fire of a machine gun can with difficulty leave the zone of fire and suffers enormous losses in a very short period of time. In modern battles the harsh, broken rattle of the machine gun is heard uninterruptedly for whole hours, producing a disheartening and irritating effect on the men. In addition to the losses suffered by a detachment coming under the fire of machine guns, the enormous losses incurred in a brief period of time cause great depression. The greatest effect is produced, both morally and physically. It is not surprising, therefore, that the machine guns were christened by the men, 'the devil's spout.'"

With the machine gun, owing to its sweeping effect, it is always easy to get the range and to follow the target without changing the sights. This is beyond the capabilities of any other fire-arm.

Col. Parker said: (11) "The fact is, the value of the machine gun has long since been discovered to be on the defensive."

Col. Macomb, who was one of our observers with the Russian Army, said: "The value of the machine gun in defensive positions, covering defiles and the like, has been generally admitted. In reality, it is equally valuable on the offensive or defensive to an active moving force which knows how to use it."

Major Peyton C. March, of our Artillery, who was an observer with the Japanese Army, gives the following graphic account of the use of machine guns on the offensive: "After the battle of Liao-Yang, the First Japanese Army occupied the territory to the north of Liao-Yang. * * About this date (Oct. 5th, 1904.) the Japanese learned that the Russians were advancing in force to the south and had crossed the Hun river. * * There were frequent attacks on the Japanese outposts. * * This movement, however, was a different thing, and the Japanese reply to it was to move up their entire army to a line extending from Pensihu through the Yentai coal mines to Yentai station and extending beyond to the left, thus occupying a front of about 25 miles, which was very thinly held at many points. * * On October 9th the Japanese right at Pensihu was attacked by a vastly superior force of Russians of all arms, which approached Pensihu from three sides. The garrison at Pensihu, which had been reinforced up to four battalions, resisted vigorously. The Russians cut the line of communications from Pensihu to Hsihoyen, and the force at Pensihu had to be cared for by passing supplies to them along the front of the army. Along the general front of the first army the Russians were approaching from the north and attempting to envelop the first Japanese line. They were in plain sight from the Japanese line, streaming over the hills in great masses and forming in front of us preparatory to attacking. Large bodies of Russian cavalry came out into the open, marched, countermarched, and retired over the

hills again. The Japanese army was intrenched all along the line, and occupied the trenches during the night of the 9th, awaiting the Russian attack." An account is then given of the artillery duel, and the report continues:—"The severest fighting was at Penishu, where two of the Japanese positions had been captured by the Russians and then retaken by the Japanese, with great casualties on both sides. The situation at this point was critical, and the independent cavalry brigade, under Prince Kanin, was swung around to the right on the 10th, coming up on the Russian left flank with 4 machine guns, enfilading the Russian position and really turning the tide of the fighting at that point in favor of the Japanese. The Russian plan of attack apparently contemplated turning the Japanese right and striking for Liao-Yang and the line of communication of the Japanese army."

In ascribing the causes of Russia's defeat, General Kuropatkin said, in "Japan's Strength In War:" "The Japanese had a considerable advantage over us, also, in their high powered ammunition, their machine guns, their innumerable mountain guns, etc." * * "They had time enough, also, to supply their army with innumerable machine guns, after they had observed, in the early stages of the war, the importance of machine gun fire."

Major Kuhn reports: "Machine guns were popular in the Japanese army and were highly spoken of by the officers."

Considering the small numbers of machine guns in the armies of the belligerents at the beginning of the war and the great increase of these weapons before its close (Russia had 8 Maxims at the opening battle of the Yalu, May 1st, 1904, and 792 before demobilization." "The Japanese troops do not appear to have been supplied with machine guns at the outbreak of the war." "The first issues were made to General Nogi's army before Port Arthur and to the cavalry brigades." * * "At the close of the war each of the two cavalry brigades was equipped with 6 machine guns and each infantry regiment with 3 guns, and it was contemplated to increase the allowance to 6 guns for each regiment, infantry and cavalry"), would it not be wise, in reaching a sound conclusion as to our policy, to place a certain value on the experience of others, and, in the words of Col. Macomb, "May, by its light, keep our feet from pitfalls and convert many a doubting Thomas into a true believer."

INDIVIDUAL INSTRUCTION.

By Major J. F. REYNOLDS LANDIS, Sixth Cavalry.

THE importance which European armies were attaching to this method of instruction was first impressed upon me by an article in the French *"Revue de Cavalerie,"* for July, 1905. In the spring of 1906, I made experiments with my own troop which convinced me of the necessity for this method of instruction and of its great value, but I was promoted and ordered to duty away from my regiment before I could reach conclusive results and place them before our officers.

My attention has been again called to this matter by an article in the Italian *"Rivista di Cavalleria,"* for May, 1909, a translation of which will be found in this number of the JOURNAL.

To illustrate the importance attached to this method and some of the means employed, I quote from the *Revue de Cavalerie:*

"Dismounted instruction * * * its chief object is to make of the cavalryman in war, a foot soldier perfectly accustomed to the individual movements of the skirmisher in fire action."

* * *

"What is infinitely more important that we should concern ourselves about from the very beginning of the dismounted work without arms, is in developing individually the intellectual faculties of the cavalryman; in setting up their minds as well as their bodies, in training their memories, in accustoming them to listen, to reflect, to understand, to be willing to act independently; in giving to each one of them, in a word, a personality instead of contenting ourselves with the superficial instruction of the mass."

* * *

"Let each of them in turn be given a very simple order, such as, 'Leave the ranks, march straight on such a point, so many

paces, halt, face about, and return to your place in ranks,' and we shall see how many of them will have understood, grasped that order, and will execute it without making a mistake.

However, that is what we must obtain first, above everything—that the man be attentive, that he listen; that he make with his intelligence the necessary effort to understand what is wanted of him; that he repeat the order, remember it, and carry out exactly."

* * *

"This is real intellectual gymnastics, an education of the mind; the object of which is to supple, to develop the soldier's intelligence and memory, to compel his attention, to take him out of ranks, to accustom him to think and act for himself in an independent manner—in a word—to individualize him."

* * *

"Your troop appearing instructed, take any one of your troopers, tell him to leave the ranks, and go and place himself at an indicated point, take such and such a firing position, load his weapon with so many cartridges, and fire at will with such an elevation of his sight at a given objective.

Nine times out of ten you will find that the man now knows nothing at all.

His position will not be right, he will not have given his sight the desired elevation, or will not have raised it at all; he will not have loaded his weapon with the prescribed number of cartridges—perhaps he will not have loaded it at all—he will aim at an object other than the one assigned him, &c., &c.

He is alone, not surrounded by his comrades, given up to himself; he has forgotten everything, he is ruined, destroyed by his isolation."

* * *

"Instruction in the use of the carbine, then, in preparatory instruction in dismounted combat must be given in a manner strictly individual, man by man, without the instructor's ever speaking to two men at a time."

"The instructor gives the cavalryman the following order:—'Leave the ranks, march so many paces, towards such an object, halt, and execute at that object the fire at will with three cartridges, in the kneeling position, sight at an elevation of so many yards.' The instructor accompanies the man, sees that his position is correct, that he loads his gun properly, that he actually aims at the object indicated, that he does not take his eyes off of it while reloading; finally, if there is occasion for it, that he has set his sight at the elevation given."

* * *

"In order that all these motions may become so habitual to the cavalryman that he will carry them out, so to speak, without thinking of them, these individual exercises must be repeated for a long time. It is advisable, too, to increase their complexity progressively and to give him some real little 'sticklers' which will make him think before acting and then act rationally, judiciously, and with initiative.

Here are a few examples:—

1. Require the cavalryman to load his magazine and place him on the lookout as if he were a vedette. (See that he has locked his piece after having closed the breech.) Then make the supposition that he is attacked and order him to fire at an indicated objective. (The first few times he will certainly forget to load his gun before trying to fire.)

2. Have him load with four cartridges, shoot one, and then keep the others in the magazine. (If the man does not think, he will close the breech after having ejected the first shell and will push a new cartridge into the chamber instead of keeping all in the magazine.)

3. Require the cavalryman to move upon a given point and, in the kneeling position, to execute the fire at will at a designated objective which he cannot see from the point in question, in the prescribed position. (He will have to, of himself, take the standing position or choose another place, according to circumstances, so as to see the objective, &c., &c.")

* * *

"The men are now taught—always one at a time, remember that—the use of cover and shelter, &c., &c."

"To sum up, instruction in the use of the carbine and preparatory instruction for dismounted action must consist exclusively of an *individual* training of the skirmisher which shall make him capable of thinking and acting on his own account without regulating his actions by those of his neighbors, but, if necessary, acting on his own initiative in conformity with the object to be attained and in accordance with the general indications of his leader. The man must come out of that school with the conviction that to-day he is no longer a simple unit in the mass, that he has to play in action a most important role, and that his thoughtful, intelligent, and *individual* action may alone insure, in the face of the enemy, the success of the body of troops to which he belongs.

* * *

"Such a result can be obtained only by long continued practice of exercises carried on over ground as varied as possible and conducted so methodically that *each* trooper—for it is on that that we must always lay stress—shall understand the object of the efforts that are required of him, should know what he has to do and should do it by *himself* without regulating on others, letting himself be guided only by his leader, concerning himself only with acting individually, keeping in mind the result to be obtained, and acting, if need be, largely on his own initiative.

A troop thus trained will be capable by itself, some day, of repaying one hundred fold the time its officers have spent and the trouble they have taken to instruct it."

* * *

"Develop to its extreme limit the intellectual and physical aptitude of each trooper for the role which he will have to play in war. To accomplish this make instruction strictly individual and concern yourself with the unit only when the training of the individual man has resulted in everything that one can expect from it."

* * *

"Convince the trooper of the importance of his individual role, accustom him to be attentive, to listen, to see and to understand; make him capable of thinking, of reflecting, of being willing to act and of acting on his own account, without regulating on his neighbors, in conformity with the orders given and, if need be, on his own initiative; that is the result towards which all our efforts should tend from the very first day of instruction."

It would seem that the results obtained by the former method of instruction had not proved satisfactory under the conditions of shortened period of service in foreign armies and that, with an enlistment period reduced to three years, our own cavalry might well make a serious trial of this method, the principles of which appeal with such sound, logical force to those who have had any experience in the training of soldiers.

In the school of the soldier and the school of the trooper, carried on in the barrack yard and the riding hall imitation in certain matters may be of value, but, as the Italian author says, "It is exactly from the moment at which the recruit begins to come out in the open that the school of the individual should begin its real development." And it is from this point that the possibility of imitation should be rigorously denied the soldier.

The author quoted sets forth the difficulties attending this method of instruction, but relies upon the esprit and the seriousness of the Italian cavalry officers to overcome them. These qualities of our own officers together with their characteristic initiative and quick appreciation of the results to be obtained will enable them readily to accept the method and to put it into practice.

Reprints and Translations.

POLO PONIES.

(From *Bit and Spur.*)

THE manly and fascinating game of polo is of Persian origin and is known to have existed under its native name of chaugán for a thousand years at least, for it was written of in the Tenth Century. Authentic data of its birth is shrouded in the dim past, but that it existed as a game played on horses and with sticks similar in shape to those now in use is certain. From Persia it extended all over Central Asia, and was played even in Thibet, that land of isolation and mystery. It traveled into the northwestern provinces of India in the distant past, and it was through this wonderful peninsula of romance and war, this land of bewitching allurements and magnificent riches and splendor, to say nothing of the enticements of its jungles and the enthralling restfulness of its tamarined topes, palmyra groves, banyan trees, and bamboo forests, that it reached England as a legacy of the days that are gone.

All sorts of stories are told as to how it found its way into England. It was supposed that it originated through the officers of cavalry regiments serving in India, which seems a very plausible theory indeed, particularly as British cavalry regiments serving in that country are always in close contact with the officers of the Indian Staff Corps who are serving with native cavalry regiments in "the Shiney." The Sowars of these regiments are wonderful horsemen, and it is more than reasonably possible that a crude idea of the ancient game should have been imparted by these men to their officers, and through them to their British

cavalry brothers who brought the idea home and so started the ball rolling.

J. Moray Brown in the Badmington Library states that the game first originated quite independently and that it resulted through some officers of the Tenth Hussars not knowing what to do one day suggested an attempt at the game after reading an account of it as it was played in the East, and that they started by riding their chargers and using crooked sticks and a billiard ball as the implements of the game. This is undoubtedly authentic, but even in the face of its authenticity the fact still remains that the idea came from the Orient, that India was really the first British possession wherein the game was played, but that it remained for England to make, cultivate, and mature it, to its present state of splendid perfection.

The first match of any account was played between the First Life Guards and Royal Horse Guards, and the second between the Ninth Lancers and Tenth Hussars; this was in 1870. In 1872 it was being played in Ireland. In 1883 it was played in Mexico, and in 1886 it had advanced so far in the United States that an Anglo-American contest was played at Newport in that year. Since then the game has grown by leaps and bounds and is becoming more popular and fashionable every day.

India, however, was the birthplace of polo so far as the modern game is concerned, for it was played in Cachar in 1854, in the Punjaub and northwest provinces in 1861, and in 1877 inter-regimental games were played in Umballa.

The game today is very different to what it was at the start, but the difference exists more in the speed and concerted team play than in any other direction. Of course the rules have been changed from time to time, and the height of the ponies increased, but the game, as a game, is virtually the same. Speed has been the great difference and that even is still increasing [redacted] will continue to do so until every pony taking part in first-class matches will not only be absolutely thoroughbred but the very fastest of its kind, and this brings us to the subject of our story.

In India, where the modern game was first played to any extent, its votaries mounted themselves on the different kinds of "tats" (ponies) usually to be found at up-country Indian

stations, but the Arab pony, owing to his gameness, activity, staying powers, and intelligence, was soon found to be the pony best adapted for the game, and was until a superior class of country-bred, half-bred, and eventually the thoroughbred, stepped into his honorable shoes. In that country, where the pony height limit is 13.2, he still holds an honored position, but owing to his lack of speed and his uselessness on slippery, muddy and holding ground, he is fast becoming supplanted by the well-bred English and Australian pony.

The Arab on the surface of the dry fissured, sun-baked ground of India, where the hoofs of contesting teams rattle as if they were racing over an oaken floor, seems to be, and actually is, in his element. This desert-born child of a sun-scorched land to which his feet, as well as his constitution, are so wonderfully adapted, where the gallop is his only pace, and rain his rare companion, seems literally to enjoy the twistings and turnings, the lightning start, the sudden stop, and the hammering concussion of the hard, hot, and unsensitive ground. On the top of a surface like this the Arab is in his glory; he is as active as a cat, generous to a degree, enters into the spirit of the game even as his master, and pulls up ready to repeat the dose to-morrow, but in heavy going he is out of his element, and out of place, and apart from this, be the ground hard or soft, his lack of speed quite unfits him for first-class polo.

As soon as the game began to get under way in England, Ireland became the great source of the polo pony supply, for they had a wonderful stamp of well-bred hunter-like little horse that filled the bill that was then required to perfection, and the Irishmen for years reaped a rich harvest in supplying this class of animal. Born horsemen and keenly alive to the growing necessity of speed, they have kept in the front rank ever since, and the Englishman taking a leaf out of their very sensible and practical book are now breeding these ponies on a large scale until the two countries are virtually supplying all the ponies for first-class polo and will continue to have the monopoly of this very remunerative business until America takes it up sensibly and in earnest.

The Western pony, which is for the most part used in this country, is a sound, rugged, active, untirable, and almost unkillable animal, the best of them are fast and make excellent polo playing mounts, but they are not fast enough to compete successfully against first-class foreign polo. Some few American ponies are as good as anything on earth and fast enough to play anywhere, but these are mostly thoroughbred, and when a Western pony ranks among the first flighters, it's a thousand to one that he is clean bred, or nearly so.

Apart from the scarcity of these very first-rate animals in this country, the trouble of discovering them and weeding them out from the vast ranges of the West is a tedious and difficult matter, and considering the expense as well as the trouble that is attached to it, seems to be not worth the candle unless tremendous prices are realized for them, which in itself is another drawback, because such a large number of ponies could be bred in which the percentage of good ones would be so much greater, that their breeders would be well paid by much smaller prices for the real article itself. Here and now is America's chance to breed polo ponies not only for the growing home but also for the foreign increasing demand. It is stated *now*, because polo ponies cannot be bred in a day, and the breeder who can see six or seven years ahead from today will have the whip hand of those who let it go until tomorrow.

Once the parent stock is secured and paid for, the owner of a ranch where the grass and water are good and the climate suitable, would be on velvet, for it would not cost him a cent more to breed this class of animal than it would to breed the ordinary kind of range pony. It is no use waiting; "procrastination is the thief of time" and the "man who hesitates is lost." Polo, when the present generation is dead and under the ground, will be alive and kicking on top of it, and for one game that is played now, twenty will be played then. The inventive genius of the American is past understanding and it may be that some son of the soil with the "bacillus inventibus" will produce a polo playing automobile; but what if he does? It will only be for the non-horsey element of society and would not last for a day with the devotee of the stick and the pigskin. Apart from this the automobile polo-playing machine would soon have a powerful

competitor in the shape of the aireo polonum micrococcus, which would play the game in the air and put its terrestrial rival out of business in short order. Burning with ambition and glowing with desire the submarine Johnny would next be very much in evidence with a kind of submarine pushball device animated by the presence of the aquæpolo spirillium. This too would pass away, but the polo pony would remain.

In selecting and purchasing the parent stock let the prospective polo pony breeder put on the thoughtful cap of wise consideration. Let him hearken, not to the voice of the theorist who breeds horses on paper and sells them ready-made before they are born, but listen to the voice of wisdom which tells him to buy blood and bone and muscle, temper and temperament, speed, staying power and soundness.

THE SCHOOL OF THE INDIVIDUAL.

From the *Rivista di Cavalleria*, May, 1902.*

THE new cavalry drill regulations gives, as the basis of training, the school of the individual. The importance of this innovation may not have been properly appreciated by some and deserves therefore to be pointed out by calling to it the especial attention of those to whom is entrusted the difficult task of instructing and educating the units of our arm.

The School of the Individual certainly does not represent a discovery of the present time, rather, one may say, it is as old as drill regulations themselves. In fact, if military history is examined with respect to training, we find this school from remote times in alternating vicissitudes of either anxious care or neglect, but always, however, called up again and revamped in those exercises which it was desired should be well organized on account of the important object they were to attain. In the cavalry this calling up is invariably observed whenever the

*Translated by Major J. F. Reynolds Landis, Sixth Cavalry.

most famous leaders of our arm, in order to satisfy their aspirations, set about perfecting the instrument that was to serve their undertakings.

General Von Schlichting in his study on the leading of troops, entitled "Moltke and Benedek," examines the preparation of the Prussian Army before 1866, and after having quoted the eulogy which, in this account the Austrian Friedjung applies to Prince Frederick Charles, adds:—

"Without doubt the Prussian Army will always be grateful "to this high personage for the direction given by him to the "training of the Infantry. Everyone knows how he proposed to "make of each individual a man in conformity with his physical "and intellectual qualities. No formal method is suitable for "carrying on a task with which so many practical results are con-"nected; on the contrary it can be made suitable for only the most "modest demands. To this is appropriate the saying, 'the esprit "'of the individual gives character to the unit.' This may also "be applied to the Army which (especially the Infantry) is "composed exclusively of individuals. It is evident therefore that "by raising the worth of each of these individuals the whole gains "much more than by having recourse to artificial devices in exer-"cises all together."

"To individualize became therefore in the Prussian Army a "sort of watchword especially for company commanders."

As I have pointed out, the need of individual training was always felt whenever one had in view a well constituted army. Moreover, if that was held indispensable in past times when much smaller armies were more easily directed, now that with the increased mass of these and with modern tactical formations, control becomes more and more difficult, it is essential that disciplined individualism should make a decided advance.

"Close order," observes General Marselli, "degenerating into fighting in dispersed order and into attack and defense of localities (forests, villages, &c.), brings back in a wise way individual fighting and increases the importance of combats of position. What method shall we find to restrain so many centrifugal forces which to-day are throwing off the yoke of tactics? Boguslawsky says: 'The means for securing discipline during combat lie only

in the personal education of the soldier and in the still more extended and repeated practice of the combat in open order.' Developing his thought to its farthest limits, he says that disorder must become the normal order, or, in other words, he says this: 'We must accustom our soldiers to keeping their heads in disorder.' The education of the individual in the widest sense of the word and in all grades is the sole restraining agent in this movement towards decomposition. Everything is lost if you cannot obtain this education."

These masterly words of our great military philosopher, if they leave in us no doubt about the reasonableness of individual training for modern infantry, bring us to analogous and even more important conclusions respecting our own arm, which on account of its more complex organization, demands a greater development of the intelligence and has functions of such a nature as to render indispensable for their execution the united aid of all the energies of the individual.

General Von Schmidt wrote: "We must constantly concern ourselves with the individual instruction of each man, but we should be pursuing the wrong way if we expected to reach that end by the instruction of the unit as a whole. There should be neither rest nor let-up until each trooper knows how to do everything he wishes to and everything he ought to do, until the employment of his horse and himself are always excellent, both in individual work and in the troop."

Our former Regulations slighted this essential point, and we know to what wretched results we were brought.

Many of us remember still the difficulties experienced by Troop Commanders in having detached duty properly executed, especially with respect to the horses. What has now become the rule was at that time an exceptional thing.

The provisional Regulations of January, 1907, set a high value on the necessity for individual instruction; and in the preface of Part II of Volume I we find the following golden words:

"Individual instruction in equitation, the Regulations for which are contained in the present volume, is inspired by the principle of forming troopers and horses capable of maneuvering

and fighting to advantage under present conditions, which are dependent upon the progress in firearms, the peculiar formation of our terrain, and the shortness of the term of service.

"To attain this standard we must be firmly convinced that, in mounted instruction, individual work should be the rule, collective work the exception; because only with troopers well instructed individually, can we attain the main object of having harmony in the unit and a living force in the mass at the moment of action without any waste through ignorance and lack of self-control."

This change in the Regulations is, as I said, of the greatest importance, because it lays down the basis of an eminently rational system which, if applied earnestly and with interest, will not fail to exercise a decided influence upon the progress of our arm.

The School of the Individual, for the soldier, is only a more limited application of the school of initiative for his commanders, because, like the latter, it aims at developing and at the same time at disciplining the energies of the individual. Therefore if it has in common with the latter certain advantages it will have likewise certain disadvantages, among which the principal one is the difficulty of carrying it on properly.

Though the innovation may appear at first sight logical and rational, yet there will not fail to appear uncertainties and even resistance before the system becomes really habitual with all, and especially will this be so for the simple reason that the new way is anything but easy, and demands a labor and an interest far beyond that required up to the present time.

For the rest, it is very readily understood how much more easy it was to carry on the school that has been abolished, which consisted in teaching regulations which might serve for the instruction and education of a whole detachment, while the new requires an accurate study of each pupil and an intelligent search for means suitable to overcome the defects of each and to develop in him skill, character and discipline.

It is hardly necessary to say that in our arm such study and work must be repeated with respect to the horses.

The work of the modern instructor is to be likened to that

of the doctor who cannot always apply the same remedy for the same disease, but who has to carry on, above all, a special study of each patient in order to know the conditions attending the development of the disease and to be able to change the application of remedies accordingly.

The School of the Individual requires, then, intense, intelligent, and persistent work to which our instructors certainly have not been accustomed, and therefore I repeat, we must not delude ourselves with the idea that simply by prescribing Regulations we can obtain the immediate application of them. We shall need time, we shall need to awaken conviction brought about by results, and we shall need, above all, the shrewdness, the firmness and the insistency of those whose duty it is to see to the exact carrying out of the prescribed Regulations in conformity with the spirit which animates them.

As evidence of these difficulties the fact is sufficient that, although this mode of training, even before its authorization, had been recommended by not a few who, for some time, had felt the importance of it, and, although the regulation which sanctions this new method has been in force for two years, we cannot yet assert that the majority is in thorough accord with the new idea and has therefore been able to put it in practice.

In fact, the results obtained are yet rather limited since, if we exclude real progress in the beginning of the instruction of the recruits, who are almost always shut up within the walls of the riding school, for the rest we see that, either through habit or through lack of zeal, we are relapsing into the unfortunate system of sticking something in that does not belong there. It is exactly from the moment at which the recruit begins to come out in the open that the School of the Individual should begin its real development, trying by thoughtful and progressive exercise to familiarize each trooper with riding by himself and with overcoming by himself the most varied difficulties. This, however, rarely happens.

Prove it for yourself by going into a drill ground during the exercises and following a troop in its field instruction. Usually you will be confronted, if not with the work of a unit, certainly with a sort of training which is very far from that of

the real School of the Individual, interpreted according to the spirit of the new Regulations.

It is thought, or it is desired to have it thought, that you can carry on the School of the Individual by performing exercises which have only the appearance of individuality. The famous school of open order, the filing off one by one, the taking of obstacles by troopers one after the other, the riding at will in a limited space, the riding by fours or squads, the causing troopers to return to their stables at such distances that they can see one another, the sending of groups of two or three over different roads, etc., are not, according to my opinion, the exercises most suited to a real and profitable School of the Individual.

All these represent a method of imitation which does not correspond at all to the object in view. Such exercises can at most constitute a useful preparation for the School of the Individual, but never the means for attaining it.

To obtain the results which this latter school intends, I consider it indispensable that the individual (trooper and horse) in carrying on exercises, overcoming difficulties, or carrying out any mission whatsoever, should not have present any means that he can imitate, but should be obliged to apply by himself the instruction he has received and to devise exclusively by himself the method, or means, that is to enable him to accomplish it successfully.

In this way alone can we hope that the School of the Individual will attain the important object of awakening and bringing into activity the latent intellectual forces of the individual and of rendering him capable of acting by himself so as to aid by judgment, skill, energy and discipline in the accomplishment of the duties entrusted to the detachment.

The profit that is obtained in carrying on an exercise or in overcoming any difficulty whatsoever by oneself is incalculably greater than that which can be obtained when one is acting with others.

Moreover, this working by oneself, in addition to developing intelligence, also increases, in a considerable degree, courage; troopers trained exclusively in overcoming ordinary difficulties

of the ground purely through imitation of their chief, if confronted by these same difficulties when by themselves, generally show themselves hesitating or do not succeed in overcoming them.

On the other hand, if these same men are accustomed to overcoming obstacles by themselves, when they do find themselves with others they feel themselves capable of encountering very difficult situations. The same may be said of the horse.

It is evident, therefore, that to attain the object desired it is necessary that the instructors should take upon themselves a many-sided task. This is a burden indispensable to the perfection of training, and therefore there is no doubt that, with the esprit and seriousness which are the rule among our officers, this work will be eagerly welcomed.

The School of the Individual is not limited to physical exercises alone; it should be applied also in another line of work of the greatest importance, that is, in military education.

Scherff, shortly after the War of 1870, wrote: "To make of each individual a combatant as perfect as possible, to teach individuals to fight together with the greatest efficacy possible, to make them soldiers and a regiment; such is the material aim of military instruction. The role of military education—which should, from the very first day, go hand in hand with instruction—is to bring these men and this regiment simultaneously up to a point where they may be equal to the duties they may be called upon to perform."

Together, then, with instruction, which, as we have seen, is concerned essentially with developing the physical and intellectual qualities, there should also be imparted military education.

This latter is considered under two distinct aspects which, in applying them, unite and fuse into a single one.

One relates to the disciplinary part and the other to the moral. In imparting individual instruction, opportunities present themselves for instilling discipline into subordinates, since troopers sent off by themselves, through the confidence placed in them, will acquire a feeling of responsibility which will be greatly increased if seniors will not neglect to exercise due and

skillful supervision, both that good results may be obtained and that errors that occur may be corrected.

Showing confidence in this way, using kindness and interest, and preferably having recourse to persuasion, not separated, however, when necessary, from firmness and severity, a powerful influence will be exerted over the minds of all, irresistibly subduing them.

Moral education springs in great part from disciplinary education, and therefore in the application of the latter arise for the most part opportunities for instilling into individuals sound moral principles which predispose one to virtue and put vice to shame. To study the character of each individual, find out his inclinations, encourage his good intentions, correct his mistakes, and destroy parasitical ideas; that is the task of the educator.

To attain practical results, all this, I repeat, must be effected individually. Moral discourses addressed to a collection of individuals for the most part represent only time and breath wasted, even though the orator is not lacking in ability and skill.

Generally these discourses are difficult for the one who makes them, and are almost always more difficult for the one who is listening to them. Let us admit, too, that the educator knows how to make his sentences plain and easily understood by all, yet he will never be able to arouse general interest, since what is fitting for one will be lacking in interest and sometimes unsuited to others. Rarely do exhortations, corrections, and admonitions which are general, hit the target, and it happens rather that those to whom they should be directed for the most part find a means of not accepting them, seeking in themselves some attenuating circumstance which is never lacking in the guilty, the negligent, and the lazy.

Therefore it is necessary that he who is selected for such a mission should talk and reason with each individual and should study his peculiarities so as to appeal to his understanding; so as to convince him.

"Modern wars," says General Von Pelet-Narbonne, "have more the character of a conflict of intellectual forces than of brute forces; from which it results that that party has the advantage who in training has succeeded in bringing out these

intellectual forces even in the troops and has tried to cultivate them so as to obtain the greatest return when they are applied practically."

But intellectual forces are easily scattered, if simultaneously with their development, there is not also infused moral sentiment and discipline, which represent the indispensable cement, because in all actions these forces have to obey a single will and to unite simultaneously upon a single objective.

Meanwhile, to be certain that the School of the Individual should have a sure and ready application, and should become, so to speak, a habit with all, it is necessary that those in authority should give to all exercises an essentially individual character, examining one by one the men trained, and making sure that each has received that development of training and education of which his faculties were susceptible. When instructors know in this way that the final judgment of their work can not be had in any other way than individually, and when, above all, by these same results they are fully persuaded of the great returns which this school gives, training and education will be on the straight and true road which leads to the greatest perfection.

With such an individual preparation all the rest will be rather easy, and the brevity of orders instead of being apparent, like that obtained solely by means of exercises as a unit, will be substantial and will undoubtedly withstand the shocks produced by unexpected events or by critical situations.

Only thus shall we be able to attain the object which the Regulations are aiming at, that is, to have harmony in the unit and a living force in the mass at the moment of action without any waste through ignorance and lack of self-control.

THE MORAL ASPECTS OF WAR.

From the *Journal of the United Service Institution of India.*

By Colonel H. V. COX, A. Q. M. G., British Army.

LET a man know the exact worth of the instrument he uses, the extent to which its temper may be trusted, the conditions under which it may be expected to fail him, and he will be better armed than the man who looks upon it as an instrument which is to be relied upon under any circumstances whatever. The worth of the instrument with which war is waged depends chiefly on moral influences to which it is subjected.

Armies are not machines, but living organisms of intense susceptibility.—*Henderson "Science of War."*

I should like to say before I get to business that I have no intention of laying down the law and wish you to be good enough to take me as in the suggestive mood throughout.

My apology for my subject is that, from personal motives I have thought a good deal about it, and I believe it hasn't done me much harm, also I find that much better men than myself have done the same.

Most of us have devoted some thought to, and have read a good deal about, the modern battlefield. That admirable publication "Combined Training" gives the clearest and most concise instructions as to what the duties of all ranks and all branches of the service should be on such occasions. I make no doubt that, like the poor, it is always with you! But "Combined Training," being what it is, cannot tell us much of the soldier as a human creature, civilized and therefore often nervous—and subject to many curious influences—some apparent, some occult—as to the enormous importance of motive—previous mental training, good food, and other matters, to men during an ordeal of the kind that modern war certainly must be.

In short "Combined Training" is obliged to treat all soldiers as of, more or less, equal and constant value. I want to try to put before you some considerations which a text-book cannot

include in its pages; and to attempt to show how these considerations affect among other things the "art of command."

We may consider here for a minute some of the conditions of a 20th century battle as recorded for us by those who have seen one.

The shortest and most graphic account of a latter day fight that I know of was the one given by the naval brigade blue jacket when asked to describe the action of Majuba Hill. He said, "It took me 3 hours to climb the blooming hill, and I only touched ground 3 times coming down!" Such power of concise description defies competition!

A battle nowadays is an event usually preceded by a great deal of hard marching in order to effect the necessary concentration for decisive action.

The soldier therefore arrives, if not tired out, at all events under considerable physical strain.

The rapid, and unforeseen, movements leading up to a big collision are very apt to throw out supply calculations, and so the soldier is frequently, if not on short commons, yet not getting the food he is accustomed to.

Experience proves that the duration of battles of the first order, such as Liao-yang or Mukden may run to several days—during that time experience also shows that many corps may be continuously engaged—for the reason that it is impossible to relieve or extract them—that no hour of the day or night can be counted upon as relaxation from the grim business in hand, and that it is extremely difficult (and not likely to become less so) to take food into the front of the battle, or to distribute it when it gets there.

Add to all this the facts that the soldier is surrounded by sights and sounds of a truly terrific nature, that he is seldom privileged to come to such close quarters as to get angry, and must therefore view the situation, if he has sufficient imagination to take it in at all, in the coolest of cold blood, and we have a very faint idea of the physical, mental and nervous strain entailed by such crises in modern war.

We read a great deal of victories—and something of defeats and failures—in most military works, but few go at all deeply into the human causes which are assuredly large factors in war.

It will be found generally that want of discipline, in the highest sense of the word, was the main cause of failure; but as discipline applies more to the soldier than the man, and as it is the man we are considering, I propose to go further and to consider if there are not often other causes, usually it is true incompatible with good discipline, but still worthy of separate consideration.

We need not go further back than 1860, as if we do, we get rapidly out of touch with the essentially modern conditions necessary for our present purpose.

In the American Civil War in 1862, at Shiloh, Buell, coming up to reinforce Grant who had been surprised and driven back in his riverside camps, found a crowd of soldiers whom he estimated at one-third of Grant's entire force or 15,000 men cowering under shelter of the river bluffs. These men had taken little part in the desperate struggle going on above them. In this particular instance the failure of Grant to entrench his camps, standing as they did with their back on the river, and the neglect of reconnaissance, which enabled Johnson to close in on the Northern Army without warning, may well have induced a nervous feeling among the Federal troops which led to panic.

At Seven Pines when Hooker brought up his Division about dark, he reported that he had been delayed by the throng of fugitives through whom the Colonel of his leading corps had had to force his way with the bayonet.

A little later at the Antietam, two Federal army corps, repulsed by Lee on his left, almost dissolved, and it was reported on the following day that many had dropped out on the march while large numbers had dispersed and left during the battle!

After Gettysburg out of 22,000 loaded rifles found on the battlefield only 6,000 were loaded with one cartridge. One rifle had 22 bullets in the barrel!

It was found that the men who fell out to boil the early morning coffee for their comrades usually forgot to fall in again till a battle was over. The term "coffee boiler" became a term of reproach in the Federal army.

These instances, and many others that occurred during this

war, are particularly interesting to us, as the soldiers were of our blood.

Want of discipline was, no doubt, the primary cause; but I think the careful student of this war will admit that the Northern armies failed till 1863 to appreciate the terrible seriousness of war as they had undertaken it—that the highly civilized and intelligent republican rank and file, permeated with the spirit which leads men to think one man as good as another, if not better, and aware that most of their officers were as amateur as themselves, adopted a critical and calculating frame of mind which must be the worst possible preparation for the vicissitudes of modern war; as it leads to pusillanimous doubt before battle and paralyzing despair after defeat. General Palfrey, writing of the army of the Potomac says: "Our success was greatly lessened by jealousy, distrust and general want of the *entente cordiale*." The fact that the troops were constantly mishandled by their amateur leaders during the earlier stages of the war no doubt caused this spirit to spread to a very dangerous extent. Where leaders capable of exciting and sustaining confidence and enthusiasm among their men existed, such as Lee, Jackson and Sherman, we hear of no such spirit causing trouble.

Turn now to a very different army—that wonderful conscript machine that invaded France in 1870—and examine certain historical occurrences. The French frontier was crossed on the 4th of August. It is recorded that the Crown Prince noticed at Worth that men were standing in file 5 and 6 deep behind many trees in rear of the fighting line, and that they could not be induced to leave their shelter. The battles of Weissenbourg, Worth and Spicheren during the first half of the month must, however, have roused in the German army generally, an assurance of victory. The retreat of the French from the Saar to the Moselle, past entrenched and abandoned camps and positions, must have created in the German ranks a sense of great superiority—Vionville on the 16th August had certainly not decreased the feeling.

On the 17th Bazaine was at bay, with his left wing behind Gravelotte close to the fortress of Metz, and in touch with the German advanced guard. His right was well thrown back to the valley of the Orme.

The German troops moving forward to reinforce the advanced guard of the first army under Steinmetz had marched 20—24 miles on the 17th in hot summer weather and the infantry were tired out, but they fed and rested well that night.

Surely never had troops a fairer promise for the day of battle! and never did an army's morale seem in less danger! Yet we know that on the 18th no less than three serious panics occurred, any one of which might have had disastrous consequences, but for the fact that the French Generals were generally ignorant of what was going on in front of them, and when they were not, the disposition of the French army was so faulty that nothing but local counter-attacks were possible.

It will be remembered that Steinmetz received his orders from Von Moltke about 10:30 A. M. on the 18th. They were that, pending the development of the movements of the 2nd army under Prince Frederick Charles, he should, at first, fight a containing battle only, attacking the French left, eventually, from the direction of the Bois du Vaux.

He might well have had 19 battalions on the northern edge of the wood by 2 P. M., but, instead of concentrating, he launched isolated battalions across the defile formed by the embankment of the Metz-Verdun road as it crossed the Mance ravine straight at the French position.

When, with the aid of the 8th Corps, acting independently under Von Goeban, these troops had captured the farm of St. Hubert, and had occupied a strong position in certain quarries at the edge of the plateau, Steinmetz jumped to the conclusion that the French were retreating in front of him, and ordered his 1st Cavalry Division to cross the defile in pursuit, supported by the artillery of the 7th Corps. Von Goeban had just moved a brigade of infantry into the defile to support St. Hubert where he foresaw a counter-attack.

This mass of troops thus came into the defile together 4 batteries leading, and within 300 yards of the French infantry holding the farm house at Point du Jour on the flank of the defile. Add to this, as Von Hoenig writes, "a wall of smoke in front, out of which the flames of the burning farm shot up, shells from 150 guns in action screaming overhead, men crowding

together, crushing the wounded, the cries of the latter and lowering over all a dense dust cloud which obscured the sun above. Imagine all this and try to realize the mental condition of men struggling to obey their orders."

Thirty-two squadrons were jammed together, the leading regiment and 4 batteries got through and the guns unlimbered. They were received with a storm of shot and shell; the limber teams, maddened with pain and with the noise, bolted back into the mass, crushing many. At this juncture the "retire" sounded and all except the 4 batteries and the 4th Uhlans got back. Meanwhile over 10,000 infantry, densely crowded together, between the south of the road and St. Hubert, had got into such appalling confusion that all efforts to rally them proved hopeless. They dribbled away into the ravine by hundreds at a time.

The 2nd Corps under Franzecky were now forming up in rear close to Resonville.

The French Generals Le Bœuf and Frossard saw its Divisions approaching, and, though only dimly conscious of the confusion in front of them, judged the moment as a suitable one for a counter-attack. The exhausted German skirmishers, who had been holding the edge of the wooded plateau unsupported since 11 A. M. gave away before it. To quote a well known account, "in a wild access of panic they dashed up the slope and on to the front of their own batteries—in vain the gunners yelled at them and threatened to fire on them—in vain mounted officers threw themselves upon them sword in hand: the mob was mad with terror, and swept through the guns, demoralizing all they came in contact with."

The situation was only saved by the artillery, some fresh infantry pushed out on his flank by Von Goeban, and the fact that the French stroke was badly supported.

But worse was in store. It was now evening and growing dark. The Royal Headquarters had arrived, and the King, who had witnessed the last regrettable incident, in spite of Von Moltke's remonstrances ordered Steinmetz to attack with all the troops he could lay hands on.

This resulted in the 7th Corps crossing the ravine towards the quarries, and in 4 battalions of Franzecky's 2nd Corps moving

over the fateful defile towards St. Hubert. Neither corps were aware that both localities were still held by hard pressed German troops and both opened fire in the growing darkness into the sorely tried and weary defenders of these localities. Many broke back from St. Hubert, overran the head of the advancing column and caused dire confusion.

It was now dark. Franzecky arrived at St. Hubert, and, apparently not realizing that he had already far too many men for any chance of useful action on the ground at his disposal, ordered his 4th Division forward. The fresh troops literally groped their way across.

The net result was that by 10:30 P. M. 48 battalions stood penned up like sheep, and almost as helpless, in a space 1,600 yards wide by 1,000 yards deep, and 300 yards from the enemy's muzzles. There they remained, always under a certain amount of fire, till next morning.

Hoenig examines the question why if it was possible to endure the situation it was not possible to organize a night assault into the French position. He concludes that the climax of the day was the bankruptcy declaration of German tactical experts, and that the spirit was still there, as proved by the endurance of the men; we may agree with the writer that the spirit had been reduced to one of endurance only, and to a pitch of demoralization incapable of further effort.

Surely, as Hoenig remarks, military history contains no parallel case.

Steinmetz, Franzecky and even the King himself had made the fatal error of looking upon their army as an instrument which could be relied upon under any circumstances. Never was a better instance of the truth of Henderson's words, "Armies are not machines." It may be noted here that the German war regulations appear to be the only ones that provide officially for the prevention of straggling and skulking in battle. One N.-C. O. in each section has no squad to lead, and moves in rear of the fighting line to see that no one remains behind; part of the duties of the "field police" is to collect stragglers and to conduct them to the nearest troops.

On the French side, the army of the Loire, as was only to be expected from its constitution, want of organization and proper equipment, furnishes many instances of want of morale. The utmost misery and privations were undergone by the troops, who, be it remembered, were almost entirely *gardes mobiles* and locally raised levies. Lonsdale Hale writes: "Many men had no shoes, very few possessed gaiters, cartridge boxes, knapsacks or camp equipment. They stowed away promiscuously spare things, food and cartridges in a canvas bag. The men received four days' supply of biscuit at a time and could only carry them by passing a string through them and wearing them as a sort of bandolier. The biscuits crumbled away by rain and snow and the men were consequently without bread; the cartridges in the canvas bag became too damp for use. The fire arms were of a most varied kind, from an 1815 model converted to an American Remington."

Yet so long as these corps, aided and abetted by the civil population, were able to confine their operations to the wooded and close country between Orleans and 40 miles south of Paris, they frequently repulsed the German force detached to check them, seriously embarrassed the German staff, and very nearly succeeded in raising the siege of the capital. Once forced out of the close country, and obliged to concentrate on Orleans, the exact worth of the instrument became apparent.

It is on record that whole regiments of cavalry were employed in extended lines to turn back the infantry fugitives to the fighting line—groundless panics were common—and the accounts of the retreat into and beyond Orleans prove a condition of complete demoralization.

The successes and the failures of the army of the Loire are very instructive reading, for it was a territorial volunteer army, operating in its own country, and in a portion of it much resembling parts of England. Our own army of defence may, however, well hope to be better provided in organization, leaders and staff.

Before leaving this part of my subject I should like to recall to your minds a pertinent episode of the South African War.

To stem the tide of invasion and rebellion very active operations were going on along the borders of Cape Colony towards the end of 1899.

Effective counter-blows were necessary and the General commanding the troops in a certain district arranged an operation of the kind. His plan, briefly, was to rail most of his troops 25 miles during the day, to march a distance of about 9 miles that night and to attack the Boer position at dawn next day—a sufficiently arduous operation for infantry only just off a long voyage.

The troops had their mid-day meal before entraining, which commenced at 12 noon, and was not completed till 5 P. M., and they took 1½ days' ration on them. From early morning till entrained in the afternoon most of the infantry were on fatigue duty.

The two batteries R. F. A., one company R. E. and two battalions of infantry arrived without opposition at the end of their rail journey, and were there joined by three companies M. I. and some Cape Police who had come to the rendezvous by road.

No previous reconnaissance had been made of the route by any one who took part in the march, so that the guides had to be blindly followed.

The force moved off at 9 P. M., its R. E. machine guns and hospitals in rear. These took a wrong road from the start, discovered it during the night, and halted till dawn.

The leading regiment of the column was ordered to march with fixed bayonets—a most wearying and useless precaution and the order is of itself a fair indication of the lack of perception which governed the proceedings. For four hours the column plodded on, when it became evident that the intended route had not been followed. By this time the infantry had marched 10½ miles over rough ground in the dark and were showing very unmistakable signs of fatigue; the discouraging rumor that the column had lost its way no doubt added to their depression. Both the Official and *Times* histories agree that the leader would have done better to have postponed what was now an extremely hazardous enterprise to another day, but, of boundless energy and iron physique himself, he could not appreciate the state of his troops. In fact he did not realize that the instrument he was using might, under the circumstances, be expected to fail him.

The troops rested an hour and moved on at 2 A. M. From

that time till daylight (4 A. M.) the wearied infantry stumbled along over ground which would have been difficult even by day. At dawn, though the General was aware that he was then close to the enemy, no precautions were taken, and it must have been evident to any soldier who thought about it at all, that the formation of the force, now moving along between hills, was courting disaster.

Eventually fired upon in column of route, a succession of disjointed, and generally spiritless, attacks on the Boer position followed. The General led instead of directing; five companies of one battalion were prematurely withdrawn from the attack, and the one party that had succeeded in gaining a foothold close to a crest of the Boer position were unfortunately shelled by their own guns.

Retirement was ordered, and its execution is thus described by an eye-witness:—

"The men retiring from the hill rushed to the donga for safety from the heavy rifle fire, and on getting into it laid down, and many went to sleep. Many men were by this time so thoroughly done up that they did not appear to care what happened to them. Many still remained on the hill, some because they had not heard the order to retire, and some, because utterly weary, they had sunk down to sleep in the dead angle at the foot of the height."

Over 500 men were missing, besides 135 known to be killed and wounded when all was over.

Parched with thirst, and half dead with fatigue, the rest of the infantry staggered back over the 11 long miles to the railway by mid-day. The steadiness and good shooting of the batteries, the presence of the mounted infantry, and a half-hearted pursuit by the enemy, alone saved them from destruction.

A promising undertaking ruined in its execution by several untoward circumstances—some unavoidable, most avoidable—but above all by want of consideration of the amount of physical endurance that could be expected of the infantry employed if success was to be hoped for.

I have not quoted from the World's Last Great War in the Far East for several reasons. Failure in morale was no doubt

uncommon in the Japanese army imbued as it was with the wonderful spirit of "Bushido." The Russian is a stubborn, unemotional soldier not much troubled by over-civilization.

Events are too recent for the true inwardness of many occurrences to have assumed their proper perspective, and reliable records are as yet scarce. Neither nation favors the candid historian.

Among occult influences affecting the soldier, in common with the rest of the world, is that known as the psychology of crowds. The subject repays study.

It is well known that a sudden impulse will affect men when congregated together and under emotion of any kind, and produce often most unexpected concerted action.

Maude concludes a lengthy inquiry into the subject by writing that "bodies of men engaged in collective operations generate a psychic force which can be felt though it cannot be measured." Again he writes that "the knowledge of how to sway a multitude is an attribute of great commanders and implies a clear conception of the resultant thought wave.

Latin races are most susceptible to this influence, and it is easier for a great leader to generate the wave in the quick intuitive French mind than in the more stolid Anglo-Saxon brain.

Napoleon seized the dominant thought wave of the French nation, and, by sheer force of will, turned where he wished."

The French staff, faced with the wave of socialism and the increasing dislike to military service, which has resulted in the dangerous shortening of the period with the colors, are almost in despair of being able to keep up a properly disciplined army. Realizing, however, this susceptibility in their people and army they have made a scientific study of the matter, holding that, by creating favorable conditions, they will be able to turn the passions of the race in one united whole upon their enemy.

It is probable that there are times during most modern battles when the majority of the infantry, engaged, possibly on both sides, in particular parts where the stress has been, and is, heaviest, are reduced, temporarily, to nothing more than armed crowds swayed by instinct alone. "Collective character" then outweighs "personal opinions."

It seems possible that a crowd of soldiers is more likely, by reason of their previous common training, to be moved to unanimous action than any other crowd of men, in short, possess more "collective character."

The result of the wave of instinct, mysteriously and instantaneously communicated may be to produce an advance which nothing can withstand, a halt which no leading can stimulate, or a retirement which no threats or blows can stop.

There is possibly a fleeting moment when it is a toss up which of the three actions is going to be taken.

It is here the true leader comes to the front. He has foreseen the stress, he has taken the opportunity of the "silence which usually denotes the moment of coming under serious fire," to say a word to his men that will remain with them when all but instinct has deserted them—he is in such close touch with them that he sees the psychological moment arriving—and he alone is able to turn it into glorious action which will make them bad to beat for the rest of a campaign.

The company or squadron leader has indeed more to think about than is laid down in any text-book on drill or training, and this important part of their duty demands as deep a study of military history in regard to humanity, as the rest does of military history in regard to tactics.

The tendency of the world as it becomes more and more civilized is towards democratic forms of government. In some countries, as in our own, the sovereign head remains, in others democracy rules in the form of a republic.

Can the same devotion be expected from an army employed by a republic as from one sent to battle by a despotic or constitutional sovereign? The feeling of personal loyalty counts for much with the soldier. It is difficult to imagine an English, German, Russian or Japanese soldier without it. It is a sentiment that has, we know, often been appealed to with striking effect.

As argued in the case of the American War, a republic has levelling tendencies which must be dangerous to the well-being of armies. With the Anglo-Saxon races democracy implies the highest form of freedom—freedom to the individual to rise as high as his abilities will carry him—and, therefore, be the race

ruled by a constitutional sovereign, or be it a republic, the democratic spirit is eventually little harmful to the soldier. Among the Latin Gallic races the tendency is to level down instead of up. *A bas* is the national expression of it in France. When the democratic spirit takes this form it becomes an insidious enemy to an army, and works towards depriving the soldier of those feelings of loyalty, respect for, and confidence in his leaders which should go far to sustain him in the stress of battle. We may well hope that the English equivalent of the ominous cry *en avant les epaulettes* will never be heard in our army.

Whatever may be our conclusion as to the effect of democraacy on the fighting man, there can be little doubt that socialism has a wholly evil influence.

Its presence in conscript armies is a factor that cannot be neglected, and, as socialism increases in a nation, so its conscript soldiers become more undependable. Its spirit is antagonistic to war. One great safeguard the world has against it is that its exponents refuse to recognize the true influence war has exerted, and always will exert, in the formation of national character. A nation of socialists by refusing to fight, if from no other cause, must become hewers of wood and drawers of water, or as extinct as the Dodo.

The inevitable presence of the socialist element in conscript armies has always seemed to me a strong argument against such an army for England.

There may be in our country a tiresome apathy towards the soldier, but we have never known that active spirit of anti-militarism which is a national danger on parts of the continent of Europe, and which is akin to socialism, if not entirely of it.

Latest developments at home seem to show that the recognized leaders of the Labour party are beginning to realize that to be prepared for war is the best way of securing peace. When the *Clarion* is found among the prophets one may conclude that socialistic doctrines are not, as yet, doing much harm to England's navy or army.

It is asserted that military service actually tends to an increase of socialism in France, and this is attributed to the very severe code of punishments, but the fact is that the severity is

necessitated by the prevalence of anti-military socialistic doctrine; and by the levelling down tendencies of the republican spirit of France herself.

This appears to be proved by the different results of military service on the manhood of Germany and of the sturdy Swiss Republic. Large numbers of socialists join the ranks and give some trouble, but it is found that they return to civil life better and more sober-minded citizens.

To sum up what it is thought may be learnt from the subject of this lecture.

First as regards the effect of moral influences upon armies.

The ordeal of modern fighting makes it more than ever necessary that the commander shall know the exact worth of the instrument he is using at the time, or, in other words, put his finger on the pulse of his command and keep it there.

The maintenance of enthusiasm, confidence and loyalty is of vital importance in any army. Criticism from within must be suppressed. This can only be effected by a high sense of discipline and by self-restraint among officers. Once the "crabbing" spirit gets abroad it becomes a canker on the morale of an army. The Federals found it so in 1860, and our own later experiences prove that we are by no means free from this malignant growth. It is to be noted that the two most successful armies that have made war in the last 50 years were remarkably free from this crabbing spirit.

Clausewitz points out that in war "everything is simple but the simplest thing is difficult. These difficulties accumulate, and produce a friction which no man can imagine who has not seen war."

It is this, he explains, which distinguishes real war from war on paper, and it must be remembered that manœuvres, or peace training for war, stop short exactly at the point at which this friction becomes an appreciable quantity. Officers and men are utterly wearied, unstrung, and out of temper. Horses and transport animals are under-fed, and over-worked and therefore unwilling—fog may prevent reports from arriving, or artillery or cavalry from seizing the right moment for action—mud delays marches, and so mars the effect of a concentration.

In fact each living atom of an army, as well as outside circumstances often appears to be (unconsciously) conspiring to thwart the will of the commander. The enormous friction thus produced is, Clausewitz says, "not concentrated, as in mechanics, at a few points, and is therefore everywhere brought into contact with the element of chance. Thus incidents take place upon which it is impossible to calculate."

The knowledge of how much weight to give to this friction, and when it is necessary to allow for it, is only to be gained by experience in war. This knowledge, therefore, combined with the strong will to overcome the friction, is an attribute of a great leader, and necessary for the proper exercise of the art of command.

The enormous importance of an efficient staff, conversant with their duties in war becomes apparent here. Ignorant staff officers double friction everywhere.

The ascendancy of democracy does not appear to be eventually baneful to the morale of Anglo-Saxon fighting men, for, with their race, it means freedom; but the levelling down tendency of Latin-Gallic democracy is certainly a harmful influence.

Socialism is a great enemy to discipline and morale, especially in conscript armies. The British soldier, under our voluntary system, being of the most truly free nation of the world, being untainted by politics or socialism, and, by constitution, less emotional than most men, should, and does, possess a very high and lasting form of morale. He also has a callousness to danger, probably due to want of imagination, which is a valuable and peculiar asset in battle. This same want of imagination, by the way, renders him a difficult subject to train in peace, and often leads to that tiresome condition commonly known as "fed up."

The study of historical instances would seem to show that what may be described as great panics are usually produced by bad major tactics. The best troops so mishandled may be reduced to utter demoralization with startling rapidity. The 2nd Corps as they moved through Gravelotte at 7 P. M., on the 18th August, 1870, marched past the King with bands playing, officers saluting, and in all the pomp and circumstance of war. Less than an hour later they had joined the inert mass below St. Hubert, and were no more fit for effort than the rest, and the débacle came about

with but little loss from French shot and shell. It will be found in most cases of lesser failures or panics that the troops were exhausted and depressed, as in the South African episode I have quoted, or in a terrain unsuited to their form of action, such as cavalry in dense forest, or infantry in a defile, that the commanders have neglected precautions, and that, in consequence, the men have become, almost unconsciously perhaps, nervous and fidgetty —something startling occurs, and panic may follow swiftly.

This brings us to the connection between health and morale.

In these days of high civilization—town bred soldiers and the nerve strain of life and war—this is a factor that is more important than ever.

Certainly if the British soldier is to fight at the top of his form he must be well fed. Inventive genius should be applied to the problem of how to cook for and to distribute food and water to troops in the stress of a modern battle. We are behind other armies in the matters of mobile kitchens and the like. The supply of food and drink to the fighting line is as important a problem as the supply of ammunition, and far more difficult. The Russians in China in 1901 had an excellent cart kitchen drawn by mules. The Americans are now making experiments with what they call a "field cooker." It is apparently a box, worked on the vacuum principle, something of the same kind as the "Thermo" bottle introduced into this country. It is stated that it completes the cooking of half-cooked stews, etc., in the trenches "while you wait," and it is altogether quite American.

Finally, I should like to put in a plea that when military history is being studied, attention should not be entirely riveted upon the strategy and tactics of the particular campaign under notice to the exclusion of considerations such as I have attempted to put before you—I was discussing my subject, from this point of view, with a well read friend of mine the other day. He told me that, after reading the best histories of any particular war for its lessons in strategy and tactics, he found it most useful to read the personal memoirs of some individual officer who had taken part in it; these supplying what may perhaps be called the human knowledge necessary to form a complete judgment of the whole matter.

IN WHAT DEGREE WILL BETTER FIREARMS AND MACHINE GUNS AFFECT THE ACTIVITY OF CAVALRY IN FUTURE WARS?*

By THEODORE EDLEN V. LERCH, Major, Austrian General Staff.

ONE of the most important cavalry questions of the present day is that of training and utilizing the cavalry in the dismounted fire fight. The correct answer to it will be of decided importance to the cavalry in the wars of the future.

The following opinions, based on personal observations and deductions, have by no means the purpose of belittling the mounted attack—which, in any event, will always be the main method employed by cavalry in battle—as being obsolete or to be resorted to only in rare cases, but are rather intended to contribute their share towards clearing up those conditions which necessitate the training in and utilization of rifle fire in a greater measure than ever heretofore.

An essay of this nature doubtlessly will lead to an illustration of those strategical and tactical conditions which have undergone a material change in consequence of arming the cavalry with modern firearms, *i. e.*, to emphasize the difference between olden times and the present day. According to my views, the Central European cavalry is just now taking the first steps to a rational use of its fire power; it enters only now the primary stages of a new epoch of education. However, a comparison between past and present days would be mainly of a mere theoretical nature and might easily lead one to criticising the past, which, in the interest of the subject in hand, ought to be avoided.

The views concerning the fire fight which have been, and still are, in part, entertained in the German as well as in the Austrian cavalry, are well known to every cavalry officer; and

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it might not be without interest to seek for the reasons which so far have prevented a thorough cultivation of the fire fight.

The main cause of the cavalry's antipathy to the fire fight might well be the fact that in it the trooper must part from his horse; that the mobile horseman is changed to an immobile foot soldier; and the consequent aversion to the dismounted fight is quite natural. To this must be added that in a dismounted fight the cavalry man encroaches on the sphere of action of another arm—the infantry—and, whether rightly or incorrectly, he feels that he is inferior to the infantry in fire action. The infantry has also always shown but little respect for the cavalry fire. All this shows why the cavalry man never did relish dismounted fire action.

Under existing conditions orders to dismount to fight on foot are, especially in peace, apt to place the cavalry leader in a critical situation. A charge he can always risk, even if it turns out unsuccessful, but to start a dismounted fire action without being dead sure of success * * *

Heretofore we employed only the "charge," and all our efforts were concentrated in that; but now we are asked to carefully consider whether it would not be best to try dismounted fire action.

The rational employment of the fire fight requires a thorough knowledge of all conditions of other arms, a multitude of theoretical and practical labors, and a cutting loose from traditional views and fixed opinions; and can we blame cavalry leaders if they are loath to discard their inherited views and the opinions instilled into them from youth up throughout their entire service?

A thorough and correct change in the system of education of any one branch of the service can be effected only by war—by a military genius, like Napoleon, who has the force and the power to enforce his views and opinions; or through a slowly appearing realization that necessity demands a change. Our cavalry, in time of peace, will have to proceed along the latter line.

New regulations, which will not treat the fire fight as a stepchild, and which will not overstep the bounds of what should be, in assigning the rifle its proper place; realization of the effect

of cavalry fire in maneuvers with other arms combined, will be found to be the proper means to instill life into the dismounted fire fight of the cavalry.

These introductory remarks, which apparently have no relation to the subject in hand, are intended merely to emphasize the cause of the heretofore disinclination for fire action as being a *natural* one, and to give us a basis for the following remarks. Supplying the cavalry with the most modern firearms, the attaching of machine gun detachments and quick-firing artillery, will not spur on the cavalry to increased efforts, so long as there is no new *spirit* which will overcome, with forceful and conclusive reasoning, the natural apathy of the cavalry to the dismounted fire fight and which will awake interest, even if it can not awake love, for the same.

The following opinions (by no means complete, and, as already stated, purely personal) concerning the fire fight of cavalry we will divide into four classes—(1) general rules; (2) fire fight against cavalry; (3) fire fight against infantry, and (4) influence of quick-firing artillery and fire fight against artillery.

1. GENERAL RULES.

The fire fight of cavalry differs essentially from that of infantry. The carbine fire forms, so to speak, a *specialty* of cavalry, and were we to undertake to apply without further ado the maxims of infantry fire to the cavalry, we would entirely mistake the object of the dismounted cavalry fight.

The possibility, thanks to the mobility of the cavalry, to inaugurate a fire fight quickly and unexpectedly, forms one of the main advantages of the dismounted cavalry action. When we recognize the fact that this mode of action is justifiable only when it fully utilizes the main factor of cavalry—mobility—we lift the veil covering the dismounted cavalry action. Therefore, in a fire fight of cavalry the first rule should always be to utilize to the utmost its ability to quickly cover large distances.

While infantry action is generally based on plans carefully thought out in advance, the necessity for fire action of cavalry will arise suddenly and unexpectedly. The cavalry leader can choose whether he will fight with the carbine or with the saber

in tactical situations in which the infantry is confined to the decision arrived at beforehand. Only in very exceptional cases should the orders given a cavalry commander read otherwise than simply "attack"; the *manner of attack*, whether with carbine or saber, should always be left to his discretion. By this the cavalry leader, even in the smallest operations, will at all times, in the execution of his task, be his own master at a moment when the infantry commander has no choice of opinion or decision.

This condition imparts to the cavalry fight a sort of impulsiveness. Only with difficulty can we imagine situations in which fire action of cavalry has been calculated on long beforehand. What cavalry leader can possibly know where fate will compel him to fight? The infantry battlefield can be calculated on with certainty long beforehand, that of cavalry never.

This characterization of cavalry action, as different from that of infantry, justifies us in designating the cavalry fight "dismounted action" or "to fight on foot." And therefore I would emphasize as the second rule, that a dismounted cavalry action should be carried out on the line that it is to be planned in the same manner as the mounted attack.

The manner of executing the cavalry fire fight differs, or ought to differ, from that of the infantry. We must not figure on cavalry fighting for hours or days to gain a decision like its sister arm. Even in those situations in which the main task of cavalry is to offer resistance, it can, as we will explain later, execute its mission in other ways than by holding possession of a certain locality.

"Manifolding" our force should always be a maxim for executing the fire fight. In extensive operations—here we point to Napoleon's campaigns—when a gifted commander-in-chief with tried and true soldiers under his command, but numerically inferior to the enemy, desires to accomplish a certain coup and then immediately attain a different object, utilizes the marching abilities of his soldiers to its fullest extent, so also must first-class cavalry always take advantage of its mobility and replace what it lacks in force, power, and numbers, by manifolding its dismounted attacks.

In most cases the slow-moving infantry will be compelled to finish a fight once begun; but the cavalry leader is able to break off a fight, or to avoid one, or to *commence a new one at a different place*. The retreat, even when it is "ordered" and not "necessary," has for infantry always a moral depression which we generally try to avoid. On the other hand, cavalry must be taught from the very beginning of things that the *sudden* opening of fire, its *disappearance* when the fire has acted effectively, and the resuming of these tactics in other places, form, in the main, the *force* and *sense* of the dismounted cavalry action.

Therefore, in the instructions given in the School of the Troop each single man must be taught that the necessary breaking off of the dismounted fire fight does not at all indicate an inferiority to infantry fire, but that the cavalry has executed its task in full when it has unexpectedly and suddenly fired on infantry and compelled it to costly deploying. Umpires in maneuvers should be required to give more value to the effect of carbine fire than heretofore, and should not be allowed to decide without further ado that the fire attack of a cavalry division, supported by artillery and machine guns, can be offset or brought to naught by the mere simple deployment of one or two infantry battalions, as is so often the case.

If in the foregoing cases we had reference to actions of larger cavalry bodies, in the following we will seek to prove by discussing fighting of smaller units, that there is also a difference between that and infantry.

Each infantry engagement is carried on with the purpose to either surround or envelop the enemy. As is well known, success achieved on the hostile flank has, in most cases, a decisive effect. But to achieve this result is extraordinarily difficult for infantry in a modern battle. A sudden and unexpected appearance in flank or rear of the opponent will but in exceptional cases be achieved by the slow-moving foot troops; in most cases it will merely be a stubborn, long-continued fire of front against front. The endeavor to envelop extends both opposing lines, and finally those parts which, in a certain sense, can be spared by the line may proceed to envelop.

It is different in a cavalry fight. In all cases cavalry will be opposed to infantry forces which are vastly superior in firearms.

It can therefore not be the cavalry's task to conduct a long drawn-out fire fight with the opponent, in which it would be defeated in the end. Each cavalry fight will have to be based, from its very inception, on an enveloping movement, *i. e.*, cavalry must always strive to force the opposing infantry to deploy, and when that is done to make a decisive attack on the flank or in rear of the enemy. While such a movement can be executed by infantry only very slowly, and as a consequence an active opponent is enabled to take proper counter measures, the mobile cavalry can execute it before the enemy discovers the intention or before he can take the proper counter measures. The maxim: *Sudden fire to force deployment or to contain and hold the infantry in front while a sudden attack is made in flank or rear*, should be the invariable rule for *each* dismounted fire action. Our drill regulations ought to make a clear distinction between a cavalry and an infantry "enveloping movement."

It is probable that some critics may hold that the above stated principles of the dismounted fire action advance nothing *new* and are well known. But all such critics I would refer to the cavalry drill regulations which do treat the fire action of cavalry in a stepmotherly manner, and prescribe that when the cavalry uses the carbine it shall be on the *defensive*. Cavalry, however, will never take kindly to the defense, and it will only then commence to realize the value of its firearm, as a weapon, when it utilizes that arm, not while lying under cover opposed to a superior enemy, but when it utilizes it in a sudden and unexpected *attack*.

2. FIRE FIGHT AGAINST CAVALRY.

Experiences of war, especially those gained in the Russo-Japanese War, have shown that cavalry is liable to seek a decision against cavalry by means of dismounted fire action. These experiences should not be rejected without further ado, neither should it be held that in a future war European cavalry will have to conduct its battles with the saber in hand. This might possibly be true if German cavalry were opposed to French cavalry; in that case it might be considered as an *affair of honor* to use the saber pure and simple. But generally war, coldly calculating the means available and the ends to be gained, pursues its own course, and he who has not carefully considered *everything* will be left in the lurch. So it appears to be an actual necessity to cast an eye on the fire fight of cavalry against cavalry.

The Russo-Japanese war astonished the European cavalrymen in so far as the very first encounters showed a resort to the carbine on the part of both opponents. In this campaign the Russian cavalry learned much, and the experience gained was utilized by it. As last year's maneuvers show, the dismounted fire action has received more attention and has been *modernized*. Even if we do not entirely approve this, it gives us good grounds for thought; for it may be found that hereafter the Russian cavalry will not always be seen opposing hostile cavalry in *attack* formation. And how shall we deal with such an opponent? We expect a mounted encounter and find a dismounted fire fight prepared for us! And will all our deployments, all our peace maneuvers, be of no use? Have all the old cavalry ideals disappeared? Are our traditions forgotten?

Any one can imagine himself into a situation—one body of cavalry marching to the front, the opposing dismounted for fire action. Little imagination is required for that. The first question the cavalry leader will ask himself may be whether to encounter or to avoid the enemy. The mounted enemy—if he stands his ground—is naturally always attacked; the dismounted opponent gives us more to think of. Different from the infantry commander, the cavalry leader can, in most cases, avoid contact if he desires. If conditions (terrain and situation) or precise orders do *not* require the attack, then the cavalry leader can, thanks to his mobility, go around the dismounted opponent and pursue his task in other ways.

I call attention here to the fact that in actual war advanced cavalry does not necessarily always get into a fight; that the tasks set a body of cavalry are not always based on probable contact with opposing cavalry; that contacts similar to those we have in our peace maneuvers, *i. e.*, being nicely calculated beforehand as to time and place, will but rarely happen.

It is a matter of course that the conduct of cavalry depends primarily on its task. Take, for instance, the interesting situation of the different bodies of cavalry in the last days of the

battle of Mukden. The Russian cavalry had to cover the retreat and to protect the west flank of the fleeing infantry masses. In carrying out this task the Russian cavalry encountered the Japanese cavalry division, which was then operating en masse for the first time. Result: Both kept up a fire fight for days (March 8th at Hausientum and March 10th at Tasintun). Undoubtedly the Russian cavalry leader, when encountering the Japanese cavalry, ought, in the start, have decided whether he should beat it under any and all circumstances, or whether his better objective might not be the flank of the Japanese infantry columns, which were then advancing to envelop the Russians. In the latter case he could easily have avoided the Japanese cavalry, which had dismounted and was ready for fire action; in the first case, he ought to have attacked it decisively and without hesitation. I leave this question for the reader to answer, and proceed from this special war situation to the attack of one body of cavalry on a dismounted opponent.

Everyone will concede that a simple dismounted attack is not correct. The advantage of our mobility should be fully utilized here as everywhere else. A small detachment, containing the enemy with fire, must be sufficient to enable us to gain the hostile flank or rear. A quick move of our cavalry, taking all advantage of the cover offered by the terrain, will either force the opposing cavalry to abandon its position, that is, it will maneuver the hostile cavalry out of its position or will enable us to make a mounted or a dismounted attack on our own terms, *i. e.*, when, where and how *we* choose, *not* the enemy. All the advantage lies on the side of the cavalry which remains mounted and preserves its freedom of movement.

From these circumstances we can also conclude that a planned dismounted fire action against hostile cavalry is only then justified when the terrain or the tactical situation do not give the hostile cavalry the choice of movement, when there is no possibility for its giving way and that it *must* strike our front. Such situations will be found, for instance, in the defense of defiles.

But all this does not yet exhaust the subject of the fire fight of cavalry against cavalry. We can confidently assert that the

armament of cavalry with better firearms and machine guns allows another manner of utilizing cavalry fire. By this we mean the quick forming of fire echelons composed of single troops, machine guns and quick-firing artillery within the sphere of a larger body of cavalry. If we succeed in opposing the attacking cavalry, at the very last moment, with such a fire front—to let the enemy, so to speak, ride right into it—we can well imagine the effect of a concentrated fire on charging cavalry. The confusion into which such an unexpected fire will throw the enemy should then be utilized to the fullest extent by the main body of the cavalry which remained mounted.

A combination of fire fight with the mounted charge is by no means easy. It requires in the first place a body of cavalry over which the leader has complete control, and which is well drilled in this matter in time of peace. So far as we can learn, Russia is the only country which has made endeavors to educate its cavalry along this line. The *combined attack*, the success of which rests on quick decision, which has to be resorted to on the spur of the moment, means a material widening out of present cavalry tactics. In any case, it offers an interesting cavaleristic problem, the solution of which we should not unnecessarily delay.

3. FIRE FIGHT AGAINST INFANTRY.

During the last few campaigns the opinion gained ground that only in exceptional cases can cavalry achieve anything with the saber against infantry armed with modern firearms, and this opinion causes us, of course, to direct our attention on the increased importance of utilizing the carbine against infantry. The saying, so frequently heard lately, that conditions of the last few campaigns outside of Europe are not applicable to Central Europe and that different tasks await our cavalry, is now hardly heard any longer; and it would be erroneous for us to pay no attention to the latest events. But it is a long road from the perception of what is correct to the adoption of it.

In any event, the cavalry will, and must, act against infantry. As is well known, cavalry actions have but very seldom a decisive influence on the course of a campaign; the *infantry* is the main arm of the field army, and as long as the power of

infantry is not weakened, all actions of the other arms—no matter how glorious—play only a secondary role. From this follows that the *most important enemy* of our cavalry is *not* the hostile cavalry, but the *hostile infantry*. It must be our endeavor to gain contact with it, to damage it as much as ever possible, and only when in the execution of that task the hostile cavalry stands in our way, will we have to reckon with it.

If we keep this idea in mind during our peace maneuvers, there will be no occasion at all for contact between opposing cavalry bodies, at least a charge of cavalry against cavalry need not be the highest object.

As the mounted attack against infantry should be resorted to only under certain circumstances, the fire fight of cavalry may be looked on as that means which allows cavalry to effectively operate against hostile infantry in all situations. Modern firearms have increased the results to be attained and offer excellent opportunity to the cavalry for taking up offensive operations. Rapid fire small arms replace men, so to speak. As cavalry can use comparatively few men for dismounted action, arming it with modern firearms means a considerable increase in its fighting powers. This is specially emphasized by attaching machine guns, each of which approximates the fire power of one platoon. The thin cavalry skirmish line has been made more powerful thereby and enabled to solve tasks for which single-loaders are insufficient.

Numerous reports of eye witnesses in the Russo-Japanese War mention the extraordiary and unexpected power which is inherent to even a very thin firing line. I will cite the Japanese Infantry Regiment No. 34 in the battle of Wafangou on June 15, 1904. Although this regiment was unable to put more than two rifles per pace on the skirmish line, the power of that thin line brought the Russian attack to a standstill, notwithstanding the Russians being more than thrice the number of the Japanese.

However, the fighting power of a weak firing line does not entirely lie in the quality of the rifles, but also in the quality of the men. Only the very best men will be victorious on a thin line.

Our cavalry is now armed with excellent rifles and in war is composed, different from our infantry, of veterans. It can perform better service than the infantry on a thin skirmish line therefore.

If the development of firearms has in a sense limited the use of the mounted attack in many respects, it has opened up a new field to the cavalry—the fire fight. The fire fight of cavalry must always reckon with thin, but powerful, skirmish lines. To adopt the infantry formation to cavalry in toto, would not be a happy solution of cavalry tactics. The explicit requirements of the Infantry Drill Regulations as to formation, density, and elongation of the skirmish line, as to the use of reserves, etc., would be only confusing if applied to the fire fight of cavalry and little relished by the already overworked cavalry. The fire fight of cavalry—based on modern firearms—must be distinguished by simplicity.

Starting from these points of view we shall now endeavor to specially characterize the fire fight of cavalry.

The dismounted attack—up to the present time treated as a stepchild—will in future receive more attention. Simple in forms, but of many forms, the dismounted attack with the carbine must correspond to the mounted attack—dash and suddenness. In most cases cavalry will be utilized against infantry which is far superior in number of firearms, for to deploy a body of cavalry against an equally strong body of infantry could not be justifiable. As consequently the cavalry can count only in very rare cases on defeating the enemy by a long drawn out fire fight—like infantry—then to gain success it must resort to different ways in the attack, *i. e.*, to deception and surprise; in many situations this success may be achieved by keeping stronger hostile infantry from interfering at a certain place and thereby relieve our own infantry; in that case success lies not directly in a decisive victory but indirectly in gaining time. It is clear that we can prevent infantry from the execution of its task by a decisive attack only, never by mere threatening to attack. Therefore, every cavalryman resorting to the carbine must have the fixed purpose—as in the charge—to carry the attack into the very heart of the enemy. The proposal to arm the cavalry with the bayonet is based on this. To assure success, the attack should be made in full strength at the very outset, as is required

by our regulations; to keep back a dismounted reserve may only very seldom be justifiable.

The *deployment* of a body of cavalry is materially different from that of an equally strong body of infantry. If, for instance, a brigade would dismount to fight on foot and proceed to the attack on the same lines as an infantry battalion, it would at once lose all its material advantages of being cavalry. The attack from two directions which the infantry always tries to achieve and which it can—especially in smaller operations—carry out only with great difficulty, is easy of execution for cavalry. It can accomplish it in two ways; first, it will, with a single firing line, force the hostile infantry to deploy and when that is done execute with the main body a quick detour and attack the enemy's flank and rear; or, second, divide its force and both bodies attacking, first mounted, then with the carbine, simultaneously from two or more directions. But to dismount the entire body of cavalry at one place and attack as *infantry* without utilizing the mobility of the horse to inaugurate the fire fight, would be the very opposite of correct procedure.

The led horses and men left behind mounted (the mounted reserve) must now be considered. We cannot blame the cavalry leader for paying too much attention to his led horses. These, whether stationary or not, are always impedimenta—a sort of necessary train, the loss of which we must never risk; and consequently their protection is of importance. Their best protection is a correct position in regard to terrain and situation. Their most dangerous enemy is the quick firing artillery and none but it can harm the led horses behind the line. Hostile cavalry we need not fear, for in face of danger from hostile cavalry, no cavalry leader would think of dismounting his command for a fire fight against infantry, and energetic reconnaissance must guard against surprise and a small detachment will be sufficient to guard the horses, being just strong enough, and no stronger, to be able to drive away any hostile patrols.

Of more importance is the question of the strength of the mounted reserve. To have this reserve springs from the quite natural desire of the cavalry leader to keep, when dismounting for fire action, at least a part of his force ready to fight "as cavalry." As is well known the reserve is charged with all manner of things falling to the lot of cavalry. Among others it has to protect the flank of the dismounted cavalry. We may ask, against whom? If the cavalry fire line is threatened by an enveloping movement of hostile infantry, the mounted reserve cannot prevent that. It might do so only by dismounted fire action. The battle reconnaissance, and *not* that part of the command designated the reserve, protects against surprise by strong hostile cavalry. Does the firing line require protection on the flank at all in the sense in which the mounted reserve is to furnish it? Or is it merely a privilege of the mounted arm on skirmish line to have its flank guarded by a separate mounted detachment?

That stereotyped task set the cavalry, "to protect the flank of the xth Division," should in the main be solved in having the cavalry display such an energetic reconnaissance activity as to guard the infantry against surprise. If for that purpose the cavalry proceeds to the front, it leaves the tactical limits of the troops engaged in battle and will no longer be available as reserve for other tasks. The same holds good in a cavalry fire fight.

The mounted reserve must also facilitate the remounting of the command and to do this properly has to charge the advancing infantry. This task, which requires the mounted reserve to keep close to its dismounted body, is of a very problematical nature. Should we, at critical moments, attack a body of infantry which is advancing confident of victory and in battle formation ready for the fire fight and which, knowing it is opposed to cavalry, has taken all proper measures against any rear and flank surprises? Should bodies of cavalry be thrown into that vortex of fire—to be sacrificed? I believe that the cavalry armament of magazine rifles and the fact of horse artillery and machine guns being attached to it, points to another way out of the difficulty, *i. e.*, covering a retreat, which has been started too late, by certain dismounted detachments and before all by machine guns. We commence just now to look on the loss of a few guns as not being an absolute misfortune or disgrace. Modern machine guns are not classed with heavy guns or flags and standards which honor requires to be defended to the last breath. In critical moments we should not hesitate to

sacrifice the machine guns or even field guns; machine gun detachments are easier to replace in a campaign than squadrons of cavalry.

All these considerations lead to the conclusion that we should keep the mounted reserve down to the minimum and charge it with the immediate protection of the led horses and make the force, designated to carry on the fire fight, as strong as possible. The cavalry leader can count on success only if, for the purpose of gaining his ends, he utilizes his *entire* strength and force without regard to side issues. The main object of the fire fight is achievement of success with the carbine; consequently each and every carbine is invaluable.

Based on above considerations and on general rules we may lay down the fire fight of a cavalry brigade (two regiments of six troops each, one battery of four guns and one machine gun detachment) against a body of infantry (three regiments) proceeding to the envelopment of the extreme wing of a battle front, as follows:

For reconnaissance, two troops, of which three platoons are utilized for strategical reconnaissance and five platoons for tactical security. This leaves ten troops for the attack, and of these

(*a*) Three troops and the machine guns for the fire fight on a broad front against the flank of the leading infantry lines, appearing there suddenly and unexpectedly;

(*b*) One regiment and the horse artillery, after executing an enveloping movement under cover, for an offensive fire attack against the rear of the infantry reserves.

One troop could remain on the extreme flank for protection of the led horses—the latter to be in several groups, not in a single one.

Or take the case of an advance of a cavalry division (four regiments of six troops each, three batteries horse artillery of four guns each, one machine gun detachment) to delay a hostile infantry division advancing in march formation:

For reconnaissance three troops; and of the remaining three and one-half regiments:

(*a*) One cavalry brigade (twelve troops) the horse batteries and machine guns to stop the leading elements of the

infantry columns, deployed and without allowing itself to become engaged in a decisive defensive battle; and

(*b*) One and one-half regiments (nine troops) in readiness, after the infantry has been forced to deploy for battle, to make a flank movement and attack the separated lines of the infantry. Of these nine troops, two will eventually remain mounted as a reserve, for the protection of the led horses.

The artillery should endeavor to overwhelm the infantry march columns with an enfilading fire, and the machine guns the skirmish lines.

Such developments for battle, without holding fast to any fixed scheme or set rules, would give the best results; but we will mention in passing that cavalry attacks, dismounted, should but seldom be made on the flanks of hostile march columns. Infantry advancing in march columns is *strongest in the flank;* only the *flanks of infantry deployed for battle* are comparatively weak.

In addition, in a cavalry fight it should be endeavored to *deceive* the enemy, to make him believe as long as possible that *infantry is in his front.* In the above cited examples, for instance, the commander of the hostile infantry will at once know that cavalry is opposed to him if the groups designated under (*a*) and (*b*) execute the fire attack at one and the same time; for it is improbable that infantry detachments could appear so unexpectedly in rear as is the case with groups (*b*). Consequently groups (*a*) have to deceive the enemy, while groups (*b*) take advantage of the deception.

Up to now it has been held that the only task which cavalry had to perform with the carbine was the *defensive.* In future we will have to apply the infantry maxim that only that defense leads to success which is combined with an energetic offense. In smaller situations—engagements of reconnoitering detachments for the possession of a defile, for instance—this maxim might be difficult of application. It is never the duty of cavalry to offer a stubborn resistance. Even if modern firearms have increased the degree of resistance cavalry can offer, we will, whenever practicable, leave that task to infantry.

To occupy important villages in front of the line of operations, reconnoitering detachments of infantry and cyclist detach-

ments, supported by machine guns and horse artillery, are more suitable than cavalry. Freedom of movement should be left the latter.

The Russo-Japanese War shows numerous instances where the Russian cavalry was charged with the immediate protection of a retreat. The usual expression: "The cavalry will cover the retreat of the xth Corps" should be interpreted only so as to require cavalry to keep the enemy at a distance by *offensive* movements. It should be left to the infantry to *stubbornly defend* important sectors during a retreat.

In all our peace maneuvers we can see cavalry charged with the defense of some hill, of some stream, by dismounted advanced divisional cavalry until the infantry finally arrives. *Defense*, as stated, is not the *province of cavalry*, and when mounted the cavalryman should be ignorant of the meaning of the word "defense." Furthermore, apparently defensive tasks—for instance the delaying of a hostile infantry column—a larger body of cavalry will have to solve *offensively*, either with the carbine or saber.

It is very probable that every action when cavalry is engaged in a fire fight against infantry will come to a standstill after the cavalry has taken the offensive and when the infantry brings its superior fire power into play. Then of course the moment of defensive action arrives; but this defense is in no way to be taken in the sense of an infantry defense. Dismounted cavalry will await the final charge of infantry only in very exceptional cases—only when the terrain is specially favorable, or when positive orders from superior headquarters demand it. Modern carbines, machine guns and above all the quick firing horse artillery promise now more success than heretofore in making a defensive stand. The correctly timed breaking off a battle, the disappearance and reappearance at a different place will guarantee better success, however, than a stubborn resistance to the last man.

4. INFLUENCE OF QUICK-FIRING ARTILLERY AND FIRE FIGHT AGAINST ARTILLERY.

No other arm has undergone, in the last years, such a change and made such progress as the artillery. This change and progress refers not only to technical matters, but also tactical employment. In time of peace it is difficult to form a correct idea of the increased effect of artillery fire; this is almost impossible in maneuvers and we can therefore but with difficulty draw correct conclusions as to the conduct of troops fired on. Batteries can come into action, entirely under cover, at 5,000 yards distance, and throw a hail of shells which in reality would be annihilating in effect. If such a hail of shells should strike larger, closed-up bodies of cavalry unexpectedly, they would be annihilated and that in shorter time than could be done by infantry fire.

In spite of this evident danger our cavalry operates—and that in close order—during our peace maneuvers in close vicinity of artillery, in such vicinity in fact as would be death in time of war. The influence which quick firing artillery has or ought to have on cavalry tactics is not yet paid sufficient attention to.

The difficulty which confronts the cavalry leader in correctly estimating the modern condition is great, but, with all that difficulty, a clinging to the battle front—as is the rule in our large maneuvers—must be avoided in the future. Distance is now of less importance than formerly, especially for cavalry; the field telegraph, automobile and auto-cycle facilitate quick connection with superior headquarters, so that cavalry can now remain more distant from the battlefield than formerly without having to fear to be too late in the operations.

If on the one hand a dangerous enemy has appeared in the shape of quick-firing artillery, the cavalry on the other hand has received a new ally in its quick-firing horse battery, which has raised its fighting power in an unthought of degree. We may even maintain that often the horse batteries may be called on to execute a certain task by *themselves* and that the cavalry will be merely acting as a guard for them. Following up this reasoning, we might also consider the temporary attaching of artillery regiments to infantry divisions. In case of having to

intercept and hold or delay hostile columns, this *reinforced* artillery could execute that task without our valuable cavalry having to be called on for assistance. The same applies to the pursuit. If the victorious infantry becomes exhausted, *cavalry divisions* and parts of the *artillery* will always be able to gather the fruits of the victory by offensive flank attacks.

But while in cavalry engagements the horse batteries conform to the movements of the cavalry, in the above mentioned actions (interception and holding of hostile columns) carried on by strong bodies of artillery, cavalry steps into the second place and must, before all, give the artillery full opportunity to display its entire effectiveness. A trial, in time of peace, letting several batteries operate with cavalry would undoubtedly teach us very much.

One of the numerous uses to which cavalry may be put is also its employment against *hostile artillery*. Very often none but cavalry will be able to approach batteries firing from covered positions far from the battlefield; cavalry will then have to try to reach these from flank and rear and at least harass them. The most effective means to be then employed is undoubtedly a *sudden and unexpected fire fight* and not a *charge*. The latter method would, in most cases, effect but a momentary detraction of the hostile artillery, while a rapid fire of carbines, supported by machine guns, at a distance of say 900 yards, might lead to placing the batteries *hors de combat*.

The attack on hostile artillery will either be made in obedience to orders from superior headquarters or may arise from a certain phase in the situation. To insert a paragraph in the regulations to the effect that cavalry detachments must attack artillery when a suitable opportunity offers, ought to be carefully considered.

Reconnaissance detachments, as a rule, have no call to engage in battle, whether with infantry or cavalry. Should not an exception be made of interference with artillery, as it is mainly, if not only, reconnaissance detachments which come into a situation to surprise batteries posted far in rear?

Cavalry will have to pay more attention in the future to the hostile artillery. Our own artillery needs now more than ever the protection of its sister arms. Our new infantry drill regulations provide for this by requiring the most advanced infantry detachments to report the position and location of the hostile artillery and the effect of the fire of our own artillery. Cavalry detachments engaged in tactical reconnaissance will often prove the best scouts for our artillery and give the best information to the artillery in regard to points on which to direct its fire. Therefore reconnoitering for the artillery should, by regulations, as is now required for infantry, be delegated to the divisional cavalry at least.

The above views make no claim to completeness and, being but personal opinions, may not be approved by everyone. Many conditions of war, which in the course of a long period of peace have been changed and improved as far as the Austrian and German armies are concerned, are not yet at all clear as far as pertaining to cavalry. Recent campaigns have given a basis to infantry, and artillery, for a correct and efficient conduct in war, but so far our cavalry has gained no model from foreign cavalry on which to base its activity in future. It can draw but negative conclusions from the war experiences of foreign cavalry. We can only hope that we will not have to pay too dear for our first future experiences.

THE PSYCHOLOGY OF WAR.

By A. REZANOF, in *Voenni Sbornik*—January, 1908.

From Précis in *Journal of Military Service Institution of India.*

EVERY soldier who has been in action realizes the profound truth that the moral factors in war are far more important than the material. This fundamental fact is in constant danger of being overlooked; in times of peace, it is very easy to forget that the conventional assumption, in all tactical and strategical problems, that 100 men equal 100 men is essentially untrue and has been adopted for convenience only. On the

actual field of battle no two bodies of men of the same numbers (given equal tactical training, equipment and physical condition—a most improbable condition) have been, or ever will be, equal in moral force. Differences of race and temperament alone forbid it. Book and manœuvre-trained officers find it very hard to realize this fact and the study of technique has very much outrun that of "moral."

Napoleon's dictum that the moral is to the physical as 3 to 1 is generally admitted to give the correct proportion, but what are the moral factors which go to make up an army's fighting power? Generally speaking, the ability and prestige of the General and the "moral" of the troops. It is, of course, impossible to express the value of these factors mathematically. Wellington's private, in stating his opinion that the Dook's long nose was worth a Division, probably went as near as is possible to a quantitative expression of the first. An army feels the second perfectly well, it knows when it has the moral force necessary for an advance and when the exhaustion of that force renders a retirement inevitable (c.f. the feeling among the troops on Spion Kop). If, however, we admit the importance of moral factors in war, the difficulty of their study is not a sufficient reason for abandoning it in despair. The successes of the greatest commanders have mainly been due to the fact that, to a perfect mastery of the technique of war, they added an ability to appreciate the value of these indefinable factors. The power to perceive when a moral superiority makes the offensive possible, especially distinguishes the great General. Suvorof's victory at Rimnik with 7,000 Russians and 18,000 Austrians over 100,000 equally well-trained and well-armed Turks, Napoleon's apparently miraculous success at Arcola were not due to mere luck. In each case the high "moral" of their troops (combined of course, with first-class leading) made possible the, materially, impossible and the Commander had the genius to recognize the existence of this invisible superiority. The comparative value of the moral factors has certainly not decreased since Napoleonic times; extended formations, the effect of modern artillery fire, and the length of the battles of to-day make tremendous demands on all ranks. The experiences of the Japanese war have convinced Russian officers

that questions of "moral" are most important and must be studied.

After all, these questions are merely a part of the problems of Collective Psychology. A good deal has been written on the psychology of crowds and a military unit is only a crowd with a very definite "collective" character. An assembly of individuals, subjected to a uniform training, open to the same influences and actuated by common motives, rapidly acquires a "collective" character. Its individual members are compelled to feel, think and act in a manner entirely different to that in which they would feel, think and act as separate individuals. No one who has formed part of a crowd at any time of excitement can have failed to notice the way that waves of feeling traverse it—waves that one seems to feel physically, so great is the power of suggestion of the mass on the individual. In the stress of battle, when every faculty is strained to the utmost, this is still more marked—the coward or one who thinks himself such, forgets, under the influence of the moral power of his comrades, his consciousness of cowardice and presses forward with the best, actuated by the same motives of patriotism and self-sacrifice. In short, he loses his individual character in the collective character of the body to which he belongs. Military discipline both welds a mass of individuals into a moral whole and subordinates that whole to the will-power of its leader, the unity of thought of the mass and the completeness of this control are the tests of the excellence, or otherwise, of our methods of training.

The writer concludes by expressing a hope that more interest will be taken in future in the study of this obscure, but most important, subject.

CAVALRY TRAINING IN SUMMER.

By Colonel LUDWICH KOCH, Commanding Hussar Regiment No. 10, Austrian Army.*

THE domain of cavalry is God's green nature; cavalry requires air, light and room for its movements. On that account it feels constrained in barracks, like a bird with its wings clipped, and is glad when winter is over and work in the open can commence. What a contrast between the monotonous winter work in the close barracks and a clear spring morning in the country?

The summer's work of the Austrian cavalry begins with the commencement of spring, when the temperature and the condition of the ground facilitate drill in the open—say about the end of March. We will designate in this article cavalry drill and exercises in the country for short as "work in the open." Our cavalry drill regulations divide the time available for this into three periods. School of the troop to June 30th; school of the squadron to July 20th; school of the regiment ostensibly to August 9th, but as a matter of fact the the end of August.

Work in the open consists of three main branches: Attack mounted, fire fight dismounted and field service. Opinions vary greatly as to the importance of these three subjects. Some swear by the mounted attack and consider the fire fight as unbecoming a cavalryman and hold that in mounted action only lies the cavalry's safety and success. Others maintain that with the present day fire effect cavalry charges are impossible, that the fire arm is the main factor and would like to see cavalry transformed into mounted infantry. Still others hold that the reconnaissance activity of cavalry can better insure the success of the whole army than can the most brilliant charges and the most successful fire fight.

*Translated from "*Kavalleristische Monatshefte*" for January 1909, by Sergeant Harry Bell, Corps of Engineers.

The mean of the above three opinions may well be the correct solution. Personally I hold that the three branches of drill are of equal importance and that each should receive equal consideration. As a rule this is not done. As in winter in the riding hall, so in summer the mounted attack is given the lion's share of attention, while fire fight and field service are treated in a stepmotherly manner.

Concerning the division of time laid down in drill regulations, I will remark the following: The extension of time to June 30th for instruction in troop drill seems to me to be excessive. The school of the troop could be thoroughly taught by May 31st, provided that we do not commence in the very start of spring with the elementary drills—these could easily have been practiced during winter.

In 1905 I had the honor to be invited by the Emperor of of Germany to an inspection of the First Guard Cavalry Brigade on the Doberitz drill grounds. The two regiments inspected by his Majesty (Gard du Corps and Life Hussars) maneuvered singly and combined in a fairly difficulty and varying terrain and executed all movements, battle formations and attack faultlessly at a gallop and with a confidence which left no doubt in my mind as to the completeness of their education. This inspection concluded with a problem of the three arms combined. And this happened on June 2d. A few days before that I had had an opportunity to admire the precision of these two regiments at their spring parade at Potsdam. I will make no comments but simply point to the difference in the drill periods in our and in the German army.

Our regulations ought to definitely state the time up to which the different drills should be had. Work in the riding hall should be completed by the end of March, riding on the "large quadrangle" and on long stretches by the end of April, and school of the troop by the end of May. Otherwise it will happen that riding hall work will still be carried on in May, and riding on the large quadrangle in June and July. This will cause delay and uncertainty in instruction, for few troops will undertake progress in instruction before the elementary drills are thoroughly carried out.

We attach too much importance to inspections as to progress made. Instead of considering a drill as a means for progressive education and to drop that drill when its object has been gained, we continue it unnecessarily until that dreaded inspection is over.

If we fix the time of instruction in the different subjects as above, the period of June 1st up to the larger fall maneuvers could be utilized for instruction in battle tactics and field service of the squadron and regiment and also for instruction in the fire fight. And in this manner we would not only gain an equal division of time for the three most important branches of instruction, but the troops would also be better prepared for the fall maneuvers and, above all, for their duty in war.

According to the requirements of our drill regulations, work in the open consists of: (1) Riding on the large quadrangle; (2) School of the troop, squadron, regiment; and (3) drill in fire fight dismounted.

(1) THE LARGE QUADRANGLE.

The large quadrangle is but a continuation of work in the riding hall carried on in the open, which somehow we cannot get rid of in summer. Riding on the large quadrangle is of value only to thoroughly trained troops and to make a show before an inspector, who has to form an estimate of the squads', platoons', and troops' efficiency in the different gaits, and of their knowledge of the use of the saber in a comparatively limited time.

To drill recruits, the large quadrangle is not at all suittable, and that, for the following reasons: As a general rule the quadrangle (about 200 paces long by 100 paces wide) is staked out and marked by eight flags or bundles of straw on poles. To keep a straight course between two flags is difficult for a recruit learning to gallop, he rather inclines to curve outward from the straight line. The continuous turning of corners and to keep the horse under control at a rapid gait is difficult and interferes with keeping up a steady gallop. Take an entire troop (say thirty troopers) on the quadrangle; on the gallop the men will get too close together and a

single recruit can throw the entire troop into disorder by taking too slow or too fast a gait. With a considerable number of troopers and the large extension of the quadrangle the troop commander will have great difficulty in overseeing each trooper's seat, holding reins and gait, and it may even be absolutely impossible for him to do so. Even in a moderate wind his commands and calls will be heard only with difficulty. Finally, no recruit can understand the art of turning his horse on the correct foot at the corners and at the regulation gait.

On the other hand, riding on an extended *straight* course is the ideal drill not only for recruits, but also for well drilled troopers in exercising the gallop. As is well known, this drill is executed in squads of five or six troopers, each following the other at about fifty paces. And even more practical, being an excellent advance preparation for troop drill, is it to let the troopers ride side by side at about one or two paces interval. It is not necessary at all to stake out a course for this; the main requirement is good, firm, level ground, for instance the edge of the regular drill ground. The first trooper or squad is lead by the squad commander, who indicates the gait and the remaining squads are supervised by the squad leaders riding in the center of their squads and having an eye on the seat, holding of reins and gait of their five or six troopers. In this exercise there are no commands, no caution as to seats, and there is no continuous turning of corners. Each rider assumes a natural seat, rides with loose reins and holds them in his left hand. The gait is indicated by the instructor riding at the head. If a horse should break the gait the rider takes hold of the reins with the right hand also or pats the horse's neck to quiet it; should the squad get into disorder, the trot is taken up for a short time. In the course of this instruction the saber exercise can be practiced and the gait easily regulated. We should take care that there is nothing to interfere with the tranquility of the horses and that the attention of the riders is not disturbed by anything. To resume: Riding along a long straight course is exceedingly suitable as a preparatory drill in gallop and should precede the riding on the large quadrangle and might even totally replace the latter.

(2) SCHOOL OF THE TROOP, SQUADRON, REGIMENT.

The mounted attack is the object of all drills. All formations laid down in drill regulations aim primarily to instruct the troopers in the different phases of attack, position in readiness, deployment. Formal drill and evolutions are important of course, because it assures quietness and correct formation, but still is but a means to gain a certain object and should be drilled only in so far as to reach that object. Everything beyond that is superfluous and hurtful and should never be resorted to simply to make a good showing at inspections. The main object is and ever will remain: drill in battle exercises for which we would lay down the following rules:

Drill in battle exercises consists of a systematic series of attack of cavalry under the most variable conditions, such as surprising the opponent by a full utilization of the terrain and by correct maneuvering; surprise of the troops on drill by either an opponent proper or one simply shown by flags during different situations and changes of formations; a series of attacks against infantry and artillery, in which those arms present at the cavalry garrison can be utilized. All these drills should be based on a simple problem. Units, from the troop up to include the regiment, should operate either independently or as echelons, reserves, offensive and defensive wings, etc., as a part of a whole. Each drill must be completely carried out, then discussed, and then repeated until the instructor is satisfied with the result. All movements and changes of formation, especially the charge, must be carried out with the most minute precision and accuracy; the direction of the objective and connection between units kept even in the most difficult terrain. To practice an attack by single, independent squads is of no value. Battle and reconnoitering patrols must be sent out, the defensive flanks and reserves called up, the meleé, the pursuit and the rally must be practiced. All cover in the terrain even the most unimportant must be utilized to the fullest extent. Each and every march of the troop from its barracks to the

drill ground should be combined with practice in march and attack formations.

If instruction is carried out along these lines it will make leaders out of the officers (which talent they never will acquire by mere formal drills and evolutions on the drill ground); it will give them opportunity to gain a complete insight into situations, independence, ability to arrive at a decision, and will transform the troop into an excellent and cutting tool in the hands of the leader. Thereby the troop will also gain confidence in the attack and in case of actual war will never be a stranger to any kind of condition and will not be helpless for want of knowledge. It is true that this kind of drill is more difficult and will require more advance preparation than the regulation evolutions and will also demand more of the horses. But it is better on the whole and is the only correct advance preparation for actual war.

Now a few remarks concerning the attack proper. The importance of surprising and misleading the enemy and the utilization of the terrain for covered approach is harped on in all textbooks. Our regulations expressly direct that no noise be made in drawing sabers and that the command for the attack should be given only at the moment of coming out of cover. In spite of this we do everything to attract the enemy's attention from afar to our coming. As a rule, whether or not surprise is possible, our trumpeters sound the "charge" at a long distance from the enemy. Even if we cannot take the enemy by surprise, who possibly is not at all clear whether he has friend or foe in his front, it is not necessary to herald our coming. Take for instance the normal attack of a cavalry regiment. The regiment is in march column. The colonel gives orders for deployment. Two squadron commanders repeat the command, six troop commanders do the same. Thereafter comes the command "charge." This also is repeated by eight officers and sounded by nine trumpeters; and is then followed by the command (given by seven officers) "gallop."

Briefly we make too much noise in our attack and consequently there can be no surprising or deceiving the enemy

even if we utilize the terrain correctly. The enemy absolutely *has* to hear us. A body of cavalry should approach silently, like a thunderstorm on the horizon. We should endeavor in all our exercises in peace to systematically educate the cavalry so that it can carry out an attack absolutely noiselessly to within close proximity of the enemy. The command for deployment, gallop and charge, should be given by saber signals only. The "charge" should be sounded only when contact with the enemy is imminent, except in such cases where we, surprised by the enemy, intend to give notification of the impending peril. One of the reasons why the signal for attack is often prematurely given is the paragraph of the regulations requiring sabers to be drawn at that command. The commander is in a certain sense forced thereby to give the command earlier than he wishes, else it may happen that his troop would strike the enemy with the sabers in the scabbards. We know that to draw saber and fasten the cord around the wrist during the beginning of the attack brings disorder in its wake. Therefore the command for drawing saber should be separate and distinct from that for attack, and the former should be given when there is a probability of contact with the enemy.

Now a few words concerning the gait. Regulations prescribe the trot to cover 300 paces per minute, and this is well enough for the riding hall and for the training of horses, but cannot be carried out on long marches and movements in changeable terrain. The correct and practicable gait will be acquired by itself on marches and in the field. No cavalryman would think of taking the regulation trot on a four week's march, say when changing station, and that on a hard road. That would but mean ruin to the horses' feet. Neither would the regulation gait be taken when riding across country, over uneven terrain, especially when the cavalry body is large. In that case the horses would soon get out of wind and prematurely play out. We generally take a gait covering 250 paces per minute, which is entirely suitable for all cases without making too great demands on the horses. If we want to cover the ground more quickly, we take the gallop. This practical march and drill gait

should be embodied in the regulations and consequently sanctioned.

(3). THE DISMOUNTED FIRE FIGHT.

According to my opinion the fire fight of cavalry has the same importance and possibly greater effect than the attack mounted. At least, the opportunity for the fire fight will be just as frequent as the attack mounted. Our regulations state: "To utilize cavalry for the fire fight will be the exception. It should be resorted to only when the cavalry can solve its task in no other way and when there is no infantry at hand." It will here be seen that regulations designate the fire fight as but an auxiliary means and emphasize this by treating first of the defense and thereafter only mention the offensive.

Such maxims are out of date at the present time. Cavalry *must* resort to the fire fight not only when a mounted attack is impossible, but also then, as a general rule, when the carbine *promises more success* than the saber. Cavalry *must* resort to the fire fight not only then when no infantry is at hand, but also when necessary support of the fire fight of infantry, either shoulder to shoulder with the infantry or in flank and rear of the enemy.

Cavalry is a pronounced offensive arm. Its celerity and mobility demand the offensive also in a fire fight; consequently the attack should come ahead of the defense in the regulations.

Let us get rid once for all of the old prejudice against and false shame of dismounting to fight on foot. In modern battles opportunities for a successful interference with the saber in hand will be scarce and getting scarcer, and should our arm be doomed to inactivity on that account? I ask you "What is more uncavalry-like, to participate in a fire fight or to be a mere spectator of how the sister arms bleed to death in battle?"

The French in the battle of Mars la Tour, had twenty-seven cavalry regiments, *i. e.*, over 12,000 troopers, inactive behind their line of battle. The very few charges which the cavalry made were resultless and combined with exceed-

ingly heavy casualties. At that time the French cavalry was armed with a carbine considered most excellent in those days. It is possible that the result of the battle would have been far different if a part of this imposing mass of cavalry had been inserted in the fire fight, say at about 5 P. M., when the debris of the half-annihilated German Thirty-eighth Infantry Brigade fell back on Mars la Tour; that is, if a part of the cavalry had gone around the western German wing and attacked the Germans in rear, while another part turned against the German cavalry. But such a use of cavalry in a fire fight on a large scale was in those days not thought of and not understood, consequently not drilled and practiced beforehand.* And how are conditions to-day after thirty-eight years?

The fire fight of cavalry has made great progress and is used in all maneuvers on a large scale. But the spirit of it is still strange to us—we know but the forms of it. Detailed education of the trooper, his independence as a skirmisher, and the conduct of the commanders leave much to be desired. Fire fight will only then have a result when it becomes the second nature, so to speak, of the cavalry, the same as riding and mounted evolutions. And this will require extensive drill and instruction. As a general rule the fire fight should be drilled and practiced daily in winter and summer by troop and later on also by regiment. A fire fight undertaken with but half drilled and uncertain troops is pregnant with, and must sooner or later lead to disaster.

There is no doubt at all but what we will finally have to acknowledge that the fire fight is one of the most important tasks of cavalry. To relegate this matter to obscurity would be most unfortunate, especially as our marksmanship is excellent and as the carbine is a most excellent arm which only lacks the bayonet for a hand to hand encounter.

Larger independent tasks of the cavalry, exploits on the flanks of and in rear of the enemy, night surprises, security during the night, etc., can in most cases be solved only by

*Foreign armies had not then learned the lessons from the use of our cavalry during the last years of our civil war.—[TRANSLATOR.]

the fire fight. There should consequently be no talk of "exceptional" employment.

Regulations lay down two rules for dismounting to fight on foot: first, all men dismount and horses are tied; second, three men dismount, the fourth remains in saddle and holds the three riderless horses, following up the line. Dismounting according to the first method has the advantage that all carbines will be on the firing line, but the disadvantage that the horses are tied fast to the original place of dismounting. In consequence, and because but seldom suitable cover for them can be found, this method will be but seldom used. The second method has the disadvantage that only seventy five per cent. of the carbines will come into the firing line, but has the great advantage in that the led horses can follow up the line and that dismounting and forming line can be done quicker than in using the first method, especially as we can get nearer to the place where we dismount. This method, which makes the troops in the firing line independent of the led horses, is more suited to the offensive and to the mobility of the cavalry and as a consequence will be the rule. The disadvantage of having less carbines on the firing line has to be put up with.

The necessity can easily arise where a fire fight will have to be started at a moment's notice, lasting but a short time and at close range—that is to rain a hail of bullets on the enemy. Take the case of two cavalry regiments suddenly getting together but separated by an impassable obstacle, a piece of swamp land, a defile, a broad and deep creek, which makes a charge out of the question. That body which, quickly grasping the situation, dismounts at once, even if not according to regulations, for the fire fight, may be able to annihilate the slower or unprepared opponent or at least cause him heavy losses before he is able to take counter measures.

The rules laid down in our regulations for a case of this kind are insufficient—they require too much time and preparation. It would be of advantage, therefore, to establish a third method, for instance, have every second trooper immediately dismount, throw his reins to his neighbor, run to

the front and empty his magazine and thereafter remount as quickly as he dismounted.

Concerning our method of drilling the fire fight I would remark as follows: As above stated, the spirit of the fire fight is strange to us. The short instruction which some of our cavalry officers receive at the school of musketry is insufficient to make competent instructors of them. Therefore, it is absolutely necessary that competent infantry officers be attached to the cavalry as instructors of musketry and that cavalry officers be attached to the infantry to receive proper instruction.* The same rule has already been adopted as far as the engineers are concerned and works well.

Especial weight should be laid, in a cavalry fire fight, on the necessity of deceiving the enemy as to the arm of service and its strength to which he is opposed. This will primarily require a change in field uniform, especially of the head gear which at the present time is the most impracticable and remarkable, that could possibly be adopted. The red cap to be worn by cavalry in the field leaves the opponent not very long in doubt as to the arm opposing him—and it forms an excellent target. Deceit will best be accomplished by having as little difference as practicable between cavalry and infantry. The following glaring faults or errors should be rectified.

As a rule led horses are in too close proximity of the firing line and without sufficient cover. This at once betrays the cavalry. The led horses must invariably be kept out of the enemy's sight. Consequently the second method of dismounting should be the rule.

In the advance the rule is close order, double rank; it should be line of skirmishers for all, including the reserve, as close order nowadays means annihilation.

The skirmish lines are too dense, often appearing as masses. The line should in the start be extended as much

*While this may be necessary and proper in the Austrain army, there is certainly no need for such instruction in our service where the cavalry is armed with the rifle and receive the same instruction as to its use as does the infantry.—[TRANSLATOR.]

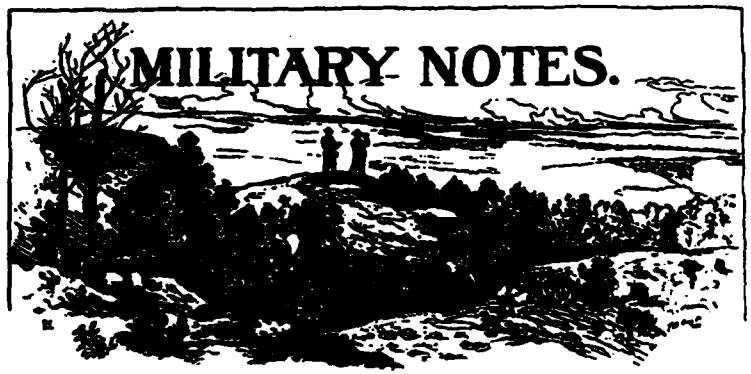
as possible to deceive the enemy and the interval between men be from five to six paces; reserves two to four paces.

The cavalry utilizes too little cover in the terrain. Commanding officers stand where men kneel. This would mean death in actual war. The commanding officer, unless he has suicidal intentions, should assume a horizontal position, same as the men.

Cavalry skirmishers use the "double time" too much. Outside the zone of fire quick time should be used, else men will get out of breath and shoot badly.

In addition, the following should never be lost sight of in a fire fight: Experiences gained from events in the Russo-Japanese War clearly show that a carrying forward of the line by the reserves, as laid down in our regulations is no longer possible. Therefore it would be well for the cavalry to take the initiative and eliminate this obsolete practice. Each practical exercise in fire fighting from the platoon up should be based on a simple problem and suitable terrain selected for it. Regular drill grounds are unsuited because the features of it are too well known. In exercises by the squadron and upwards, the importance of celerity and mobility of the cavalry should be illustrated and taught by dismounted fire action on the flanks and in rear of the enemy. If practicable, all exercises should be carried out by having two parties opposing each other, or else have one party represented by targets. In each exercise a few shots should be fired with blank cartridges else the men will not get a correct idea of the exercises. Last year our military authorities encouraged this by doubling the heretofore insufficient allowance of twenty cartridges per man.

To conclude my opinions concerning the fire fight, I can assure the reader from my personal experiences that the fire fight will become more and more interesting the more we occupy ourselves with it and that dislike and prejudice will disappear the deeper we go into the subject.



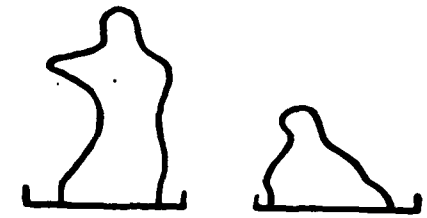
A BARRACK YARD SHIRMISH RANGE.

ONE of the most uncertain things in our target practice is the prospective value of a skirmish run; the cost of ammunition precludes a heavy expenditure for this purpose and the majority of our men do their record shooting with altogether too little preliminary practice.

Again, when shooting at the silhouettes, the man makes either a hit or a miss; he has no way of knowing the character of his miss except the uncertain one of seeing the dust fly, and having fired his shot he does not know whether it is good or bad.

To remedy this defect and to afford ample practice in skirmishing at the small cost of gallery ammunition the following scheme has been devised by First Lieutenant, C. R. Mayo, Tenth Cavalry, which has afforded considerable amusement and incidentally a great deal of instruction.

The target group is stencilled on a bit of card board, the group for each range reduced in size to correspond with a reduction in distance to fifty feet from the muzzle. In order to practice, the man in manipulating the sights and setting



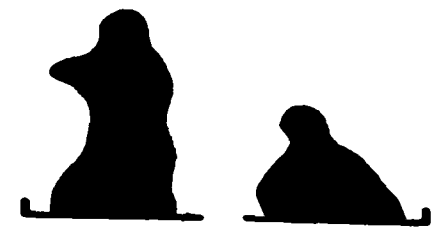


FIGURE 1—600 YARDS.

them at the various ranges, an outline figure is traced above the stencilled one, the height above it being determined by the ordinate of the trajectory at fifty feet according to the set of the sights. The man therefore aims at the figure and shoots at the outline.

To make a skirmish run with these targets requires a set of six targets, a time keeper and a marker.

The No. 1 target being in place the marksman fires his two shots under warning from the timekeeper, then rises and retires fifty yards at quick time and returns to the firing point at double time; meanwhile the marker has substituted target No. 2, corresponding to a 500 yard range and by the time the marksman has reached the firing point all is ready for his next two shots. This procedure is repeated for each of the series of shots required for a skirmish run.

The marksman can be coached at each shot by the marker and if shots are high or low can correct his aim for the next.

The dimensions of these targets are mathematically correct; the height of the outline figure above the silhouette only approximately so, having been determined experimentally and it may vary for different rifles but it is believed that the targets are sufficiently accurate.

The small space necessary for this practice, only 200 feet, the very small cost of the ammunition, and the convenience under which the practice can be conducted, offer, it is believed, a valuable aid to instruction in skirmish firing.

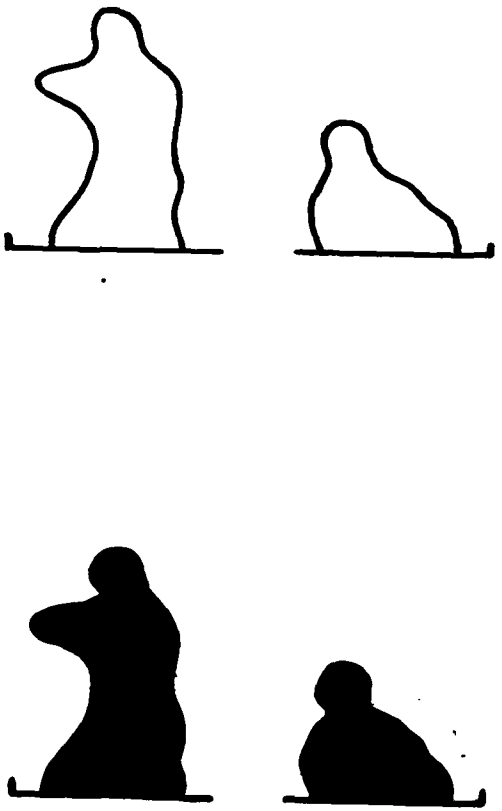


FIGURE 2—600 YARDS.

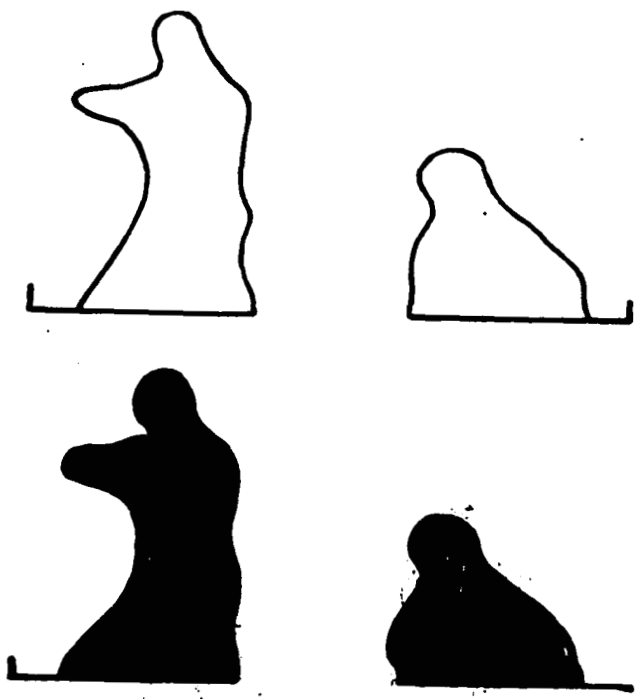


FIGURE 3—400 YARDS.

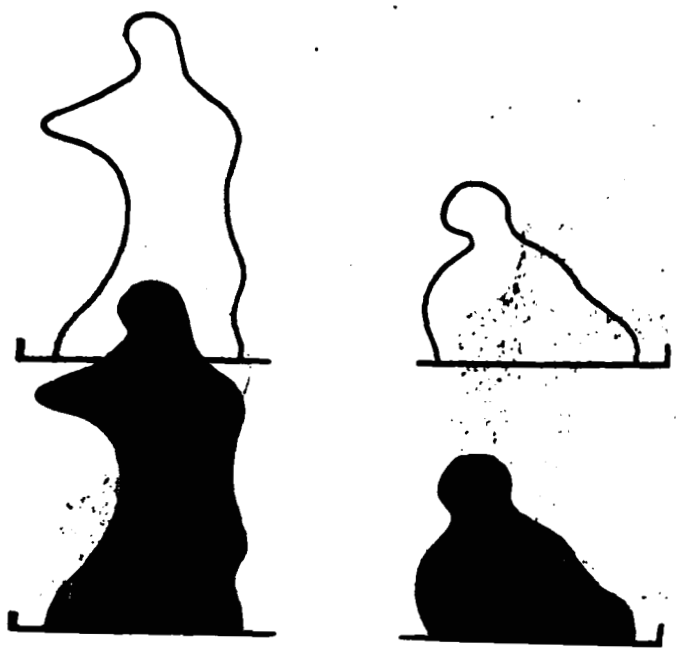


FIGURE 4—350 YARDS.

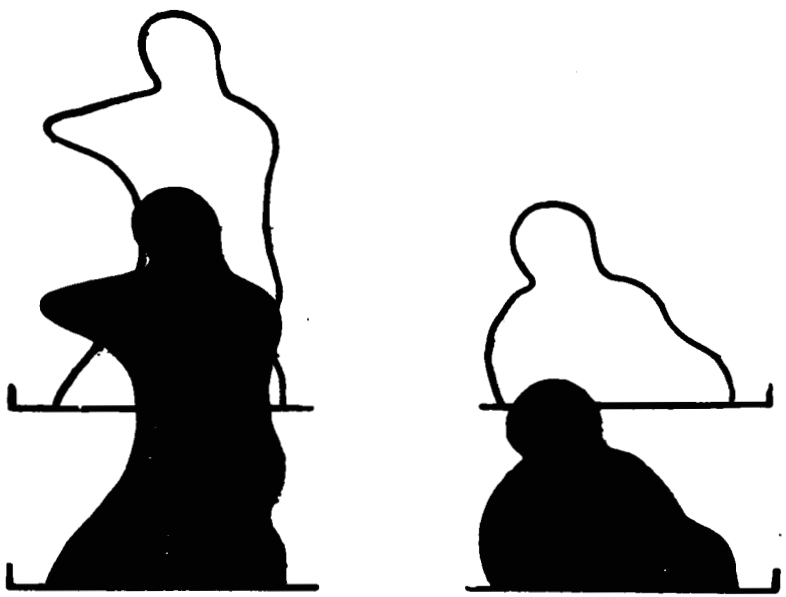


FIGURE 5—300 YARDS.

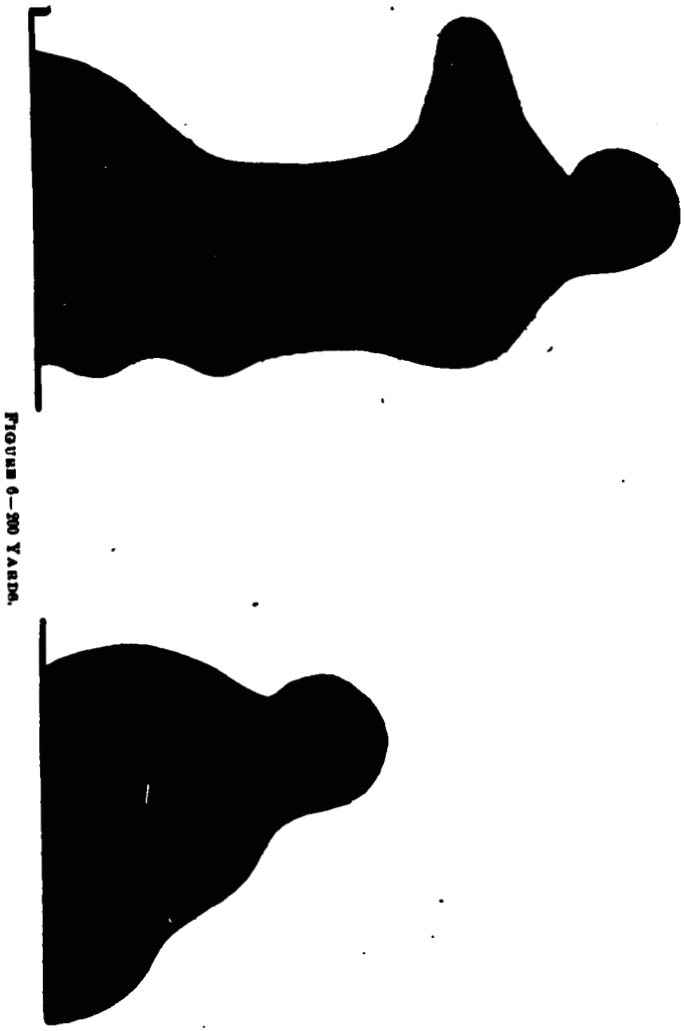


FIGURE 6—200 YARDS.

THE MAXIM SILENCER.

ON March 27th a test was made by *Arms and the Man* of Mr. Maxim's silencer attached to the service rifle. Most ofthe firing was done from a machine rest at the thousand yard range.

"Strings of ten shots each were fired from the machine rest at intervals of one minute, carefully measured, first without the silencer and then with the silencer. The targets could not be measured in fractions of inches on account of the rough way of plotting, but a comparison of the two led to an instant conviction that between the strings of ten there was not much choice. The mean vertical of both targets was about fourteen inches. The fluctuating head wind, changeable as it was in both velocity and direction, would account for much of this. The wind conditions were carefully watched and the pairs of targets, with and without the silencer, were shot in as near the same kind of wind as practicable. This program was continued practically unchanged until a series of six pairs of targets had been shot."

A diminution of the recoil and the absence of disagreeable shock were noticed when using the silencer. The report was about as loud as a .22 long.

Firing was done after dark and it was found that the silencer completely obliterated the flash.

THE ELLIOTT INTRENCHING TOOL.

ARMS and the Man gives the following description of the Elliott intrenching tool:

"It is of light weight (two pounds and one and three-fourths ounces) and its mechanism permits it to be secured in compact form for carrying. It requires no carrier and dispenses with so much additional weight and expense of equipment, care of equipment, and annoyance caused by break down of parts of the carrier.

"When in the secure position it can be inserted over the belt, blade to the front. When so carried it is snug and comfortable for the wearer; does not rattle against other equipments, or fret the wearer by beating against his limbs while marching; nor does it engage or interfere with brush in moving through close country. It does not interfere with the firer when prone or in other positions for firing.

It is stouter than the ordinary spade or shovel, and will withstand more rough usage. It will cut brush and roots up to three inches in diameter.

"Its mechanical construction is such that it will withstand all the strain that the steel of the blade itself will withstand.

"The size and shape of the blade is such as to render it peculiarly adapted for work in heavy or sticky clay. The blade is thick and stout, and is so shaped as to readily wedge itself into clay and loosen it, as the contour of the blade has been designed to secure the mean effective composite profile of a spade and pick. The projection on the back of the blade adds to this effect and helps it to cut easily into stiff earth and to pry it out easily. It serves all the purposes of a pick for heavy clay or a hatchet for small roots and brush.

"The adjustment whereby the blade is at right angles to the handle is especially convenient in constructing the trench prone. The tool as thus adjusted, is used to scrape earth, hoe-fashion, from the trench to the parapet and for leveling the parapet to the required height and making its top surface flat and broad."

The illustrations show a small spade with rounded cutting edge and a short round handle. The blade can be set at right angles to the handle for use as a pick or can be folded down against the handle for carrying.

SOME MODIFICATIONS OF THE CAVALRY EQUIPMENT.

FIGURE No. 1 represents a device for the prevention of the lateral motion of the rifle and rifle scabbard. It consists of a small strap riveted to the scabbard, as shown in the illustration, and buckled to the near cincha ring. This simple device has been in use in Troop "H" Fourth Cavalry,

FIGURE 1.

for almost a year, and has been found to be very effectual in steadying the rifle scabbard, especially at the increased gaits.

Figures 2, 3 and 4 represent the long pack, some form of which is now in use in the majority of cavalry troops. The two lower coat straps have been taken out of the cantle and

inserted in the saddlebag staples instead. This has the effect of strapping the long pack to the saddle quite near the ends of the pack, thus preventing the motion that has always been so objectionable in this kind of a pack. As arranged in the illustration, there is practically no motion, even at the increased gaits. It has been found desirable to place the lariat (coiled), and picket pin in the nosebag; it is held securely by the coat strap. The nosebag itself, is placed

FIGURE 2.

over the end of the roll, the US down, the nosebag strap being drawn over the roll, then under it and through the near cantle ring, then over the roll, and buckled; the strap makes a figure 8 over the roll.

This method of arranging the roll has some obvious disadvantages, but it has the supreme merit of making a tight pack with no motion and no noise. It is not desirable of

course, to use the saddlebag staples as described; but some day, perhaps, the Ordnance Department will move the coat straps down nearer the sidebars, and such use will not be necessary.

C. BURNETT,
First Lieutenant, Fourth Cavalry.

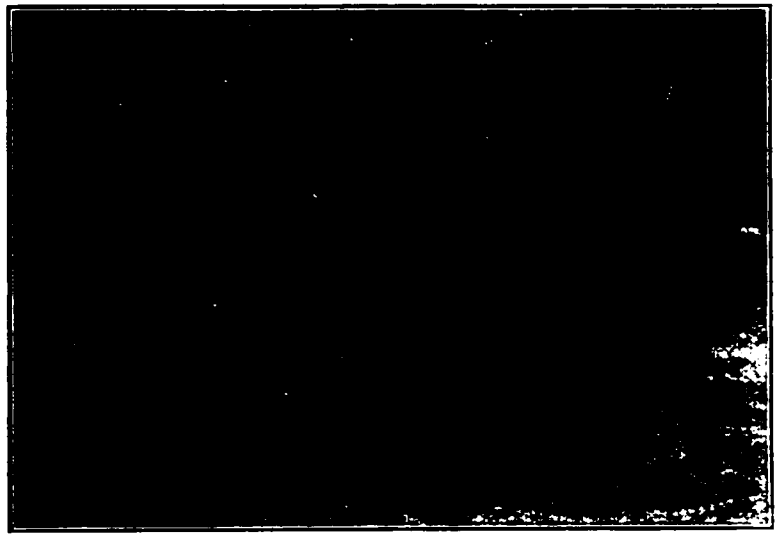


FIGURE 3.

FIGURE 4.

HORSE RACING IN JAPAN.

The following clipping from the *New York Press* has been sent us by one of our members, with this notation: "This is one line of conduct where our Japanese friends have not infringed on any copyright of ours. Congress, at least, cannot justly complain."

JOHN H. Snodgrass, the American consul, reports from Kobe that it is announced that the Japanese government will ask the diet at its next session to appropriate $175,000 annually *for improving* the *breed of horses*, and that this sum will be divided among thirteen racing clubs. The consul also writes concerning a new regulation for horse racing in Japan.

"In view of the interest manifested in the United States concerning race-course gambling, the following new regulations for the control of horse races, issued by the Japanese cabinet, may be of interest:

"'1. No one shall be permitted to hold horse races except racing clubs formed in conformity with Article 34 of the civil code.

"'2. Horse races shall be held twice a year regularly by each club, and the number of days when racing will take place on each occasion shall not exceed four.

"'3. No horses *useless for horse* breeding purposes *shall be allowed to* run in the races.

"'4. Each horse-racing association shall adopt its own regulations for races and submit them to the *director* of the *stud bureau*.

"'5. The director of the stud bureau, when he deems it necessary for the improvement of horse breeding, may partially subsidize the clubs for the expenses of the races

"'All matters relating to the maintenance of order and public morals shall be in the hands of the local authorities.

"'7. If a horse race is found to be run in the circumstances referred to below, the authorities may order it to be stopped or may take proper steps for the punishment of the racing club responsible: (*a*) When the racing club is found to violate this regulation or is guilty of any other irregularity; (*b*) When danger is found to be present in matters relating to the races; (*c*) When it is deemed necessary to take action for the maintenance of order and public morals of the race course.'"

SYSONBY IN FULL FLIGHT.

THE accompanying cut is from a photograph furnished by Captain Frank R. McCoy, Third Cavalry, who writes: "Here is Sysonby in full flight looking much as though he were running neck and neck with Andrew Carnegie's Icthyosaurus on some primordial beach. The skeleton was set up by that game lover of the horse, Professor Osborn, Curator of the American Museum of Natural History, after much study, skillful study and expense. It can be seen in his wonder house by any bold cavalryman who is on leave if he can tear himself away from Broadway."

SKELETON OF SYSONBY.
American Museum of Natural History, New York.

A COMBINED SHELTER TENT AND HAMMOCK.

IN an article on "The Native Scout Organization" by Major J. H. Munro, Philippine Scouts, (omitted from this number owing to its length and lack of space) are described two forms of shelter tents and hammocks that have been used in Samar. Figure 1 shows the construction of the first and figures 2, 3 and 4 show how it is used for a bed or hammock.

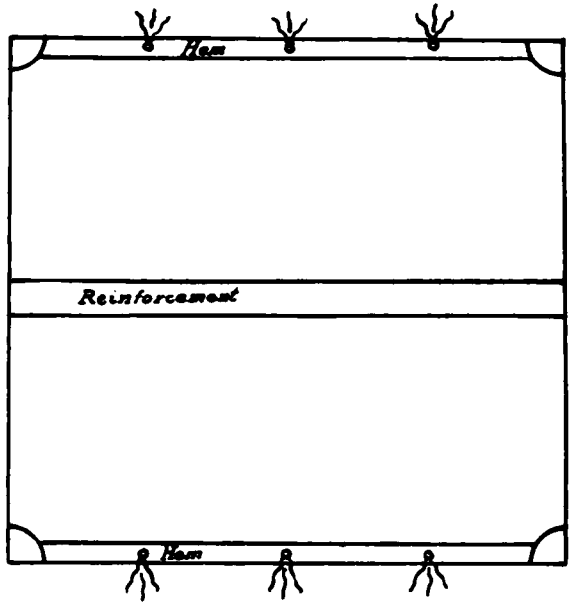


FIGURE 1.

A piece of light, strong material, six feet square, reinforced and with thongs along the edges as shown.

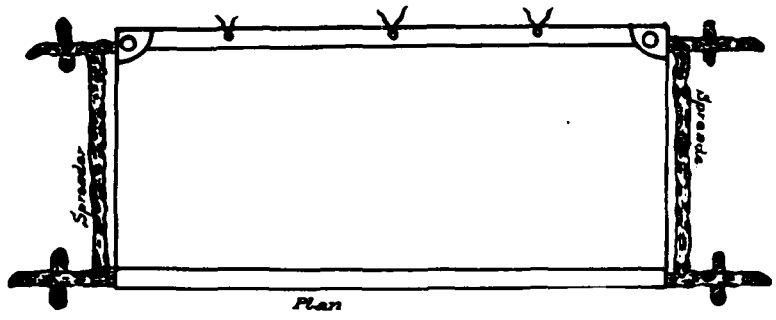


FIGURE 2.

Folded on reinforcement and used as a bed for semi-permanent camp.

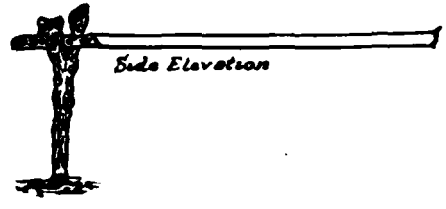


FIGURE 3.

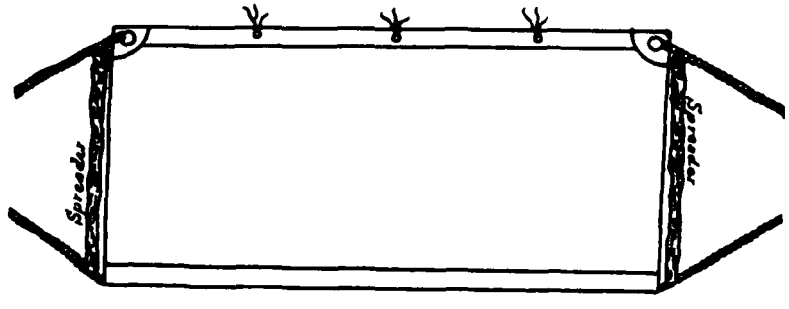


FIGURE 4.

Folded as for a bed and used as a hammock.

Figures 5 and 6 shows how it may be used as a shelter tent. In figure 5 two are tied together and pitched as a shelter tent with cogon thatch for a ridge. Along the ridge is a strip of bamboo or sapling secured to the ridge pole by a piece of bejuco or vine.

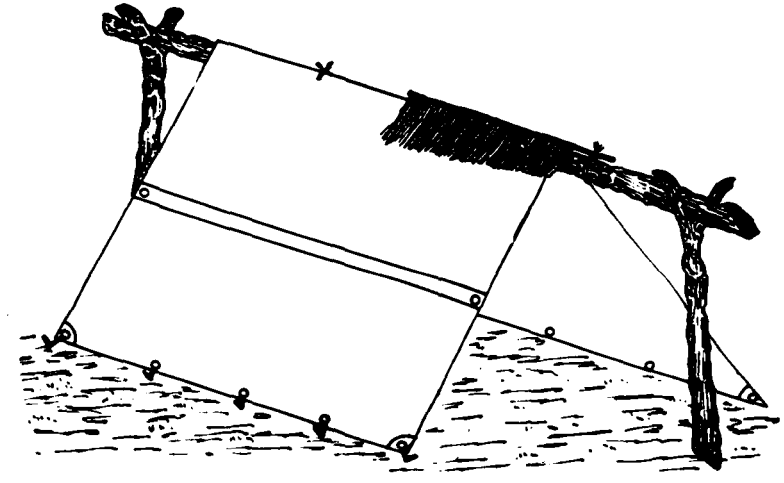


FIGURE 5.

Figure 6 shows four pairs of hammocks pitched in a continuous line with the edges overlapping. The entire tent can be covered with grass or large leaves and thereby rendered sun and rain proof for semi-permanent camps.

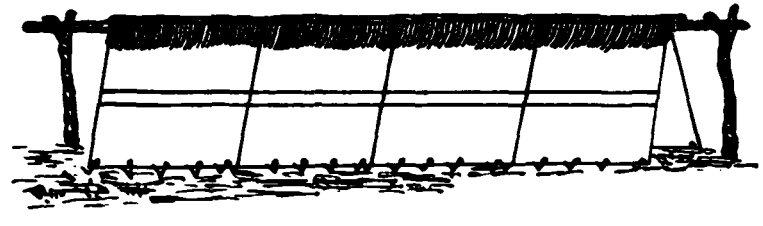


FIGURE 6.

Figure 7 illustrates a combined shelter tent and hammock as devised and used by Lieutenant M. C. Gustin, Philippine Scouts, which can be used for both purposes in a similar manner to the one first described.

It is made of a piece of light canvas, five feet by six feet, reinforced as shown, at the corners and along the center. Either half may be rigged as a hammock by using light ropes A, A, A, A, as shown and the other half can be thrown over the occupant of the hammock.

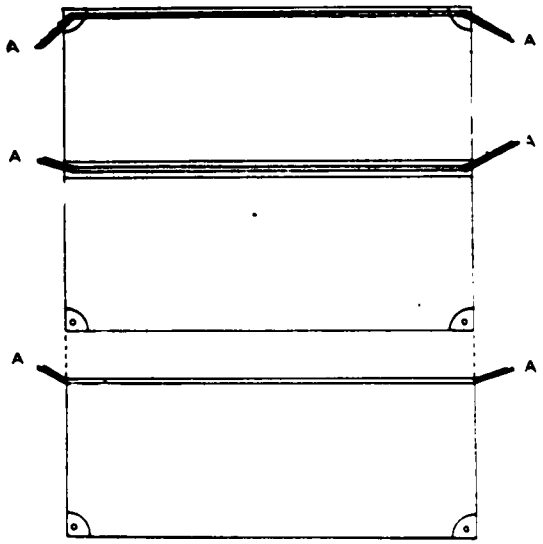


FIGURE 7.

The lower part of the figure shows elevation of the hammock when swung with the free side hanging down.

Regarding this question of shelter, Major Munro says:

"The scout needs a light woolen blanket although this is not an absolute necessity if an extra woolen shirt is carried or some form of combined shelter half and cover is provided. The shelter half as issued is of little use to any one as a protection from rain, and as a tent, pure and simple, it is of no use to the scout. When he uses it at all he ties the ends in a gather and makes a hammock of it.

"This gives a good suggestion for remodeling the shelter tent in the scout's case, and two of these remodeled forms are shown in the illustrations herewith which will do away with the shelter tent and its worse than useless poles. These are both on the hammock principle.

"Nearly every scout officer in Samar used some form of hammock for the field. A common form was made from discarded gold medal cot covers. A light rope was run down each side with enough surplus on each end to fasten the hammock to trees. Two sticks as spreaders are cut from material at hand and the poncho is thrown over the sleeper to protect him from the rain. A rough leaf roof or shelter is sometimes put up over the hammock."

Captain Rhodes, Sixth Cavalry, has written the following letter to the *Journal of the U. S. Infantry Association*, in reply to criticism by infantry officers appearing in that periodical and in certain service journals, of a recent article by him on "Cavalry Expansion."

To the Editor of the Infantry Journal, Washington, D. C.

SIR:—At my rather isolated Philippine station, the January number of the always welcome *Infantry Journal* surprises me with adverse editorial comment upon a paragraph contained in my article on Cavalry Expansion, published in the November December number of the *Journal of the Military Service Institution*. This is the paragraph:

" * * * * In the guerrilla period of the Philippine Insurrection, the mounted troops, regular cavalry and hastily organized detachments of mounted infantry, were almost the only troops which accomplished anything, until concentration camps were established. Foot troops, except in exceptional localities were almost useless."

Editorial comment questions just when the so-called guerrilla period began and ended, and characterizes the statement made, as an *absurdity*.

It might have been more prudent for the writer to have explained that he referred to that period of the Insurrection

in Luzon, immediately preceding the proclamation, when most insurgent organizations were disbanded and living in our midst as *amigos*, the arms hidden in the *bosque*, and the enemy's operations almost altogether confined to annoying shootings-up of *Americanista* towns, and the not infrequent assassination of natives who tried to help us. Had he felt it necessary to go into details, it might also have been said that the writer referred to the main Insurrection in Luzon, and not to the heavily wooded terrain found in Samar, Leyte, Mindoro, Mindanao and the like.

I believe that most infantry officers will bear me out in saying that during this period nearly every volunteer infantry regiment in Luzon was striving to organize and equip a mounted detachment of about sixty picked men; and that infantry scouting parties picked up every available horse and pony for the transportation of the men. At the beginning of the year 1901, almost all the best scouting in Luzon was being done by these mounted detachments of infantry or cavalry. Using my own men both mounted and dismounted, my experience seemed to agree fully with that of many infantry officers who talked with me in Manila on the transports, and after return to the United States, that during the period referred to, mounted detachments produced the best results.

It was not in the least a question of the relative efficiency of the personnel, as mounted infantry detachments appeared to do quite as excellent work as cavalry except in their care of horse flesh. But insurgent movements were so secret and sudden, and our troops were surrounded by such a net work of sedition and espionage, that all commanders—irrespective of arm of the service, were quick to see the advantages of mounted work in effecting rapid concentrations of troops. Furthermore, anything which tended to minimize foot marches of infantry under a blazing tropical sun or ankle-deep in water, decreased the sick report and raised the effective strength of all organizations.

In justice to the evident intent of my article and my desire to be known as a fair and unprejudiced student of the uses and limitations of the three arms combined, I hope you will feel able to give this brief statement the publicity which was accorded my news item. And in this connection, may I quote from the article mentioned, what was intended to be the gist of my argument for the use of mounted detachments in purely guerrilla warfare:

"* * * * to concentrate a superior force at a strategic point in the shortest time; saving our infantry, always our main dependence when it comes to serious contact, from vexatious, fatiguing, and oftentimes demoralizing operations."

Sincerely yours,

C. D. RHODES,
Captain, Sixth Cavalry.

POST OF JOLO., P. I., April 20, 1909.

Problems.

PROBLEM NO. 12.*

(*See map of Fort Leavenworth published in the Cavalry Journal for July, 1907.*)

General Situation.

Hostilities have broken out between Kansas (Red) and Missouri (Blue).

Special Situation.

A strong Blue detachment crosses the river at Fort Leavenworth at 8:00 A. M., on June 1st to gather supplies in Leavenworth.

It is probable that a small Red force with one or two field guns, reported to be assembling at Kickapoo, will attempt to cut off the detachment before it can return the next day.

To guard against this, the detachment commander details one troop to hold the crossings of Salt Creek, at 1, and just west of 15 and Captain A with his troop to hold the crossing at Frenchman and prevent the enemy from crossing there.

Required:

1. Captain A's dispositions for defense.
2. Reasons for them.

Note 1. The terminal bridge does not exist.

Note 2. Assume that while there is very little water in Salt Creek, it is only passable at the points mentioned, either by ford or bridge, and has steep banks elsewhere.

*The approved solution will appear in the next number of the CAVALRY JOURNAL.

PROBLEM No. 11.

(See CAVALRY JOURNAL, April, 1909, page 897.)

SOLUTION.

It is assumed that Colonel A has out an advanced guard of (say) two troops and that patrols covered the march.

Colonel A will send the leading troop of the main body west to gain contact with the advance troops of the cavalry division and to arrange with those troops for keeping touch during the night. The commander of the troop will be informed of the situation and that the regiment will bivouac just north of 17. He will be further charged with keeping hostile patrols off the high ground at Briedenbach and Crook Point. At dusk this troop will retire to the bivouac except such patrols as may be necessary to keep touch with the advance troops of the division.

Colonel A makes the following further dispositions: The regiment to bivouac in the hollow just north of 17; the horses in the hollow west of the road; the men *toward*, not on, the crest of the slopes by squadron, one squadron toward 17, one toward J. Aaron and the other behind the high ground, 400 yards northeast of 19.

One troop of the advance guard to remain at Kickapoo till dark, reconnoitering to the northwest and west, the remainder of the advance guard to join the regiment at once.

Two officers, each with a platoon, to secure forage for the horses and enough food to help out the emergency ration for the men by requisition, at the same time cutting all telephone wires leading from the vicinity and assembling the near by inhabitants at J. Aaron. Inhabitants so assembled and any others caught moving about to be held at J. Aaron under guard until the regiment moves in the morning.

Just before dark a *dismounted* outpost to be established with a picket of a platoon at each of 19, 21 and bridge over Plum Creek just north of J. Aaron.

During the night there will be on watch:

2 men at each picket	6 men
2 men over prisoners	2 men
1 man at bivouac of each squadron	3 men
2 men on picket line of each squadron	6 men
Total	17 men

Three reliefs of seventeen men each, or fifty-one men, each of whom loses part of the night's rest. Two horses are kept near each picket for messenger service which makes six horses that lose a part of the night's rest.

In addition the horses and men needed to keep touch with the advance troops of the division.

Second requirement:

Colonel A is just entering a campaign. His men and horses must be given food and rest to preserve them for the hard work that is coming. To keep a large percentage of men and horses on duty at night would wear them out to no purpose. Colonel A, in a strange country, can not hope to maneuver at night, hence there is no use of keeping part of the horses saddled all night.

There is no reason to believe that any but small hostile forces are in the immediate vicinity and besides a large force can move at night only by keeping the roads.

The principle danger is from the west, which directions are well guarded. The position selected is a secure one, difficult to surprise, retaining freedom of movement in any direction by the numerous roads and, in case of attack, affording the horses shelter from hostile fire, while offering many favorable points for defense by rifle fire.

The inhabitants are corraled to keep them from learning the exact dispositions of the regiment and then escaping to serve as guides for the enemy. Without an exact knowledge of the regiment's dispositions and a sure guide from the vicinity, a night attack would be an exceedingly perilous undertaking for the enemy.

Editor's Table.

ELIMINATION.

Probably no proposed legislation affecting our army has ever aroused as much general interest and provoked as much discussion as has arisen over the so called Elimination Bill, introduced at the last session of Congress, reintroduced at the present special session, and that had the approval of the then Secretary of War, the present President of the United States. It having such prominent backing has created the impression that this bill, or one on similar lines, will ultimately become a law.

Such being the case, it is but natural that those most vitally interested should discuss its merits to the fullest extent and, in case there is any probability of its becoming a law, to use their best efforts to have it perfected and the objectionable features, if any there be, removed before it becomes a law.

That some form of elimination, or of elimination combined with selection, will be adopted for the army in the not very distant future, is the opinion of many officers, some of them high in rank and having influence in affecting legislation. It is also the judgment of many of our officers that some form of elimination could be adopted that would eliminate the mental, moral aud physical inefficients from our ranks, and that such would be welcomed by those officers who are capable, thoroughly efficient, and energetic and who have the welfare of the army and nation at heart. It goes without saying that the inefficients do not favor any form of elimination.

Very few officers of the army have been found who favor any form of promotion by selection and many would be glad to see the laws that we now have on this question so modified as to prohibit any selection being made, if practicable, through personal or political influence. That this is not practicable in the extreme is evidenced by the workings of the law and regulations for the selection of officers for detail on the general staff. Probably no laws or regulations in the history of our army, have been more honestly and conscientiously carried out than has been this one and still it is continually being asserted that such and such an officer was selected because he was the personal friend of or had served on the staff of a member of the board. However, the selections have been good and it is but natural that the members of these boards should turn to those that they personally know are worthy, efficient and energetic, and it is certain that no written evidence gleaned from Efficiency Reports is as reliable as the personal knowledge of an officer gained from having served with him. Those who may be equally or, in some instances, possibly better fitted for these details to the general staff are unfortunate in not having had their abilities brought to the attention of these boards by having personally served with them or by having been too modest in preparing their annual Efficiency Reports or, as often happens, in having served under a commanding officer who took little interest in reporting the work of their worthy officers.

It is believed by many officers that no mortal mind can frame a law for promotion by selection that is to be executed by mortal man that will prove satisfactory to the army at large, but that on the contrary any such law would continue to produce dissentions and heartburnings and consequently a lack of harmony and be a menace to discipline.

This Elimination Bill being now on the calendar of the sixty first Congress is liable to be brought up for consideration at almost any time during the next, the long session and it behooves all of our officers in all the branches to study thoroughly this question and be prepared to offer collectively and individually the result of such study.

If practicable, the army should unite upon what would be an acceptable and just bill or otherwise our efforts will be in vain. It is believed that Congress will listen to the officers of the army if they are practically united on this or any subject but, as has so often been the case, we have never agreed among ourselves and no harmonious action has been taken and our efforts have been disjointed and unavailing. Either one branch has worked to get through some pet scheme for advancement and all such have generally had some underlying idea of an increase whereby promotion was secured.

This vital question affects all branches and is one on which all can and should unite.

The Fort Leavenworth branch of the Cavalry Association has had this subject under discussion for some time and it was hoped that the results of their deliberation might be given in this number of the JOURNAL.

As it is, it is only possible to give here a few of the ideas that have been advanced pro and con at these meetings and from those received from elsewhere.

Some officers believe we now have laws on our statute books that, if honestly and conscientiously carried out, would eliminate practically all of our inefficients; that courts-martial can and should rid the army of the morally inefficient officers and that the retiring and examining boards can and should rid the service of those who are mentally and physically disqualified; and that if the administration of these laws is not honestly and faithfully carried out, how can we expect any other scheme with boards to work any better.

It is undoubtedly true that our present system has retained many that are morally, mentally and physically disqualified and unfit to command but it is the general opinion that this is not, with a few minor exceptions, the fault of the courts and boards.

Others are in favor of retaining the present system of weeding out those who are unfit to retain their commissions but to greatly enlarge the powers and duties of the examining boards so that they shall be of the nature of Courts of Inquiry and be required to secure positive evidence as to the qualifications, habits and temperament of those being exam-

ined for commissions as second lieutenants and as to the mental, moral and physical fitness of those being examined for promotion as well as their general fitness to command; that many of our worthless officers might and should be eliminated by the boards examining them for entrance into the army, that is we should eliminate at the bottom; and that these boards should have an officer similar to a Judge Advocate of a Court Martial whose duties should be to obtain the entire history, good and bad, of the one being examined.

All this would require the modification of existing laws to enlarge the powers and duties of the examining boards and, to make it effective, it would be necessary to make their action final and not subject to review by higher authorities. It is believed that, as a rule, the examining and retiring boards do their duties and seldom make a mistake.

"This proposed bill provides for the physical examination *only*, of majors and lieutenant colonels to determine their fitness for promotion and that those found incapacitated for service by reason of disability contracted in the line of duty shall be retired with the rank of the next higher grade but that those found disqualified by their own misconduct shall be *honorably* discharged with one year's pay. Why honorably discharged?"

"It is important that no officer of the line below the grade of colonel shall be promoted until he has passed a thorough mental and physical examination, the mental examination to be as practical as possible and to cover sufficient ground to demonstrate that the officer has made the best use of his opportunities in his present grade and is thoroughly prepared to perform the duties to which he is to be advanced. No officer should be promoted unless he is recommended for promotion by the board which examined him."

"That the number of officers in each arm of the service should not be determined wholly by the enlisted strength and organization of the respective arms, but should be fixed by law in accordance with the needs of the service."

"That, whenever the number of officers in any grade of any arm of the service, is increased, the other arms, by the voluntary transfer of officers in such grade to the same grade

of the arm thus increased, should receive their proportionate share of the said increase, based on the number of officers in each arm respectively, before such increase. *Provided*, that if the required number of officers in such grade do not voluntarily transfer, that number of the senior officers of the next lower grade shall be promoted and so transferred."

"That the ratios between the officers of different grades should be the same in all arms of the service, and that, by the means of the so called extra officers bill and the detailed staff, these ratios should be so fixed as to correct, as far as practicable in this manner, the irregularities in promotion."

"That additional regularity and rapidity of promotion, as far as necessary and practicable for the efficiency of the service, should be secured by eliminating the inefficient in all grades (with or without pay, depending on whether or not the inefficiency is due to their own acts or omissions,) and by retiring the least efficient in the grades of colonel, lieutenant colonel and major, with the rank, and three fourths of the pay of the next higher grade."

"There was once tried in our service a scheme of elimination which was supposed to have all the necessary safe guards to not only protect the officers but the government as well, but which, if the grumbling and tales of woe regarding it heard in the army for many, many years is any criterion by which to judge its merits, it was a dismal failure. It is certain that, although the board therein provided by this Act of July 15, 1870, the famous Benzine Board, was composed of one major general, one brigadier general and three colonels and presumably did their duty as best they could—there were no Efficiency Reports in those days—that many, very many officers were retained who should have gone out and some, at least, were discharged with a years pay who were efficient and more worthy than those who sent them before this board. The top notchers, and many of them in those days were inefficient and from their habits, morals and physical condition unfitted to command, made the recommendations and they seemed to have been accepted without question."

INFANTRY FIRE IN BATTLE.

A lecture on this subject was delivered at the Army War College, on February 17, 1909, by Lieutenant R. K. Evans, General Staff, which has attracted much attention, and deservedly. On account of the importance of this question, especially to the infantryman and equally so to the cavalryman as regards his dismounted work in war; the numerous historical examples of the enormous waste of ammunition in battle for the number of hits made; the necessity for more thorough training in order to obtain the best results; this lecture should be read, studied and digested by every infantry officer. The cavalryman also, will find much of interest and value in it, although he probably will not agree with a few of the statements made. For instance where he states that "We sometimes hear it said that it requires less time to make an infantryman than a cavalryman or artilleryman. This is a dangerous doctrine to preach." The truth is never dangerous and a moments consideration, or rather it is self evident that it certainly takes at least twice and probably three or more times as long to make a thoroughly efficient cavalryman from the raw recruit as it would to make an equally efficient infantryman from the same material. The cavalryman is or should be, as efficient on the field of battle with his rifle as the infantryman and when he has attained this efficiency, he has but commenced his training, he having still two other arms with which he should be equally as efficient and then as much or more time should be spent in training his horse and in learning to ride him properly.

However, all will agree with the lecturer when he says, "This theory that infantry of any value in battle can be made in a short time has cost us some bitter experiences," and equally true is the statement that the controlling factor in deciding battles is the infantry fire. The cavalryman will also differ with him in the assertion that "we may win battles and even wars with second rate artillery and cavalry but if our infantry is at all inferior, that means certain defeat with all that it involves for the army and nation."

The foregoing is but preliminary to the purpose of this paper as it is intended to give a resumé of this valuable lecture and to make copious extracts from it for the benefit of our readers. The lecture has been published in full in several of the service journals.

He premises by stating that over eighty per cent. of the men that fall in battle go down under infantry fire and that therefore the training of our infantry in good shooting is the most important feature in preparing for war. He gives several examples to show the immense expenditure of ammunition heretofore required to make a hit in battle, and gives the following estimate of the probable number of hits in battle as compared with the number of hits that the same troops would make at known distance shooting on the range.

"In the last few years the most exhaustive experiments have been conducted in Europe, involving the expenditure of millions of cartridges, in order to determine the relations existing between three kinds of fire; first, over ordinary ranges at known, measured distances; second, over field ranges at unknown distances and at moving and disappearing targets; third, actual battle results have been carefully studied from the reports of special observers sent to accompany opposing armies in war, and from the most reliable statistics available.

"From these experiments and observations, it is now generally accepted that to obtain the probable results to be expected from a given number of men firing for a given time in field firing at unknown distances and at disappearing or moving targets, we must divide the number of hits made by this number of men firing for this time on the ordinary target range at known distances by 20, and to obtain the probable number of hits for the same number of men and time in actual battle, we must again divide by 20. For example, 100 men firing at 600 yards for two minutes on an ordinary range at known and measured distances, make 800 hits. To obtain the probable number of hits at field firing, with the same number of men for the same time over unknown distances at disappearing or moving targets, we must divide by 20, giving 40 hits. To find the probabilities in actual battle

we again divide by 20, giving 2 hits. Such figures warrant the assertion that the battle results of infantry fire are pitiful in comparison with what might be obtained if we can improve the work of the man behind the gun."

The following on the subject of drill and the drill regulations is unquestionably correct:

"To accomplish great results, we must have coöperation. We might define a soldier to be a man who works in coöperation with his comrades for the attainment of one great end and object—victory. To obtain victory we must have discipline in our ranks. The universally accepted way to attain discipline is through drill. Drill in itself is nothing. It is only as a means to an end—discipline—that it is invaluable. It is only through strict, vigorous, rigorous drill that the officer gets the habit of command and the soldier the habit of prompt, unhesitating obedience.

"To arrive at a fair idea of what we have actually and practically done to get the best results out of our soldiers in battle, this talk will be divided into two parts: first, what we have done and are doing; second, what we should still further do—our works of commission and omission.

"Under commission, we have, first, close order drill. The drill regulations of all civilized nations are very much the same, and our book is about as good, in most respects, as any. As to our parade ground drill, I will say that in my opinion we do not insist enough on accuracy, precision and snap of execution. Recognizing that drill is only practiced to create and develop discipline, while we are at it, let us do it well and hard and strenuously. I believe that the tendency toward laxness and slovenliness in drill has grown considerably since our late little wars. This is mainly a habit and a custom and can only be corrected by developing a sentiment against it among our officers.

"Second, extended order. In extended order I think we tend to the opposite extreme; that we frequently practice it with too much formalism and do not give enough latitude. After the soldier is instructed in the elementary forms of deployment on the parade, the rest of his extended order drill should be on uneven, broken ground, in woods and brush, and always with a tactical war situation in view.

"These remarks are not intended as an unqualified approval of our drill regulations as a whole. In one respect they are believed to be radically wrong in theory and to inculcate erroneous ideas on the important subject of the infantry attack, which may lead to useless loss of life and disaster in battle.

"In the schools of the squad, company and battalion, we have a number of paragraphs under the heading, 'Normal Attack,' which undertake to teach standard, stereotype, fixed formations and methods for making the infantry attack. These paragraphs treat the attack very much as if it were a parade ground evolution, specifying the formations to be taken at fixed distances, the number of halts to be made in the advance, and the number of rounds to be fired at each halt.

"The drill regulations of all other nations clearly recognize such teaching to be wrong in principle and vicious and dangerous in theory and generally positively forbid any attempt to reduce the attack to fixed forms. They all lay great stress on the careful teaching of general principles and theories governing the attack, leaving the individual officer and soldier free to apply them in action according to the ever changing and never exactly recurring conditions of battle.

"There is no such thing as a normal attack formation and procedure. It is, therefore, wrong, if not criminal, to attempt to teach it to men who will probably not discover the mistake until they learn it through unnecessary loss of life in their first battle."

He states that our system of training on the target range is good but is subject to minor criticisms; that in the strenuous efforts to make figures of merit and higher classifications for individuals and the consequent extra pay, we lose sight of the fact that the real object of target practice is to fit the soldier for doing good shooting in battle that there is too much coaching on the range and that all of the soldiers practice on the range is under entirely different conditions

from what he experiences in battle. Under this head he says: "The most striking difference between our system of range firing and that of other nations, is the importance which we give to firing at the longer ranges—from 500 to 1,000 yards. No other country advocates or practices instruction fire at such ranges. There are several reasons for this. First, if a man misses the target at the short ranges it is his own fault. Either he does not aim or pull properly and his instructor can discover and correct the fault. Second, at the longer ranges the rifle is seldom, if ever, aimed directly at the bulls-eye. Allowances must be made for a number of causes of error. Third, it is unprofitable to practice on the range at those ranges where the probable error in estimating distances is equal to or greater than the error in markmanship. For the longer and extreme ranges, no one expects individual fire to compensate in any degree for the attendant waste of ammunition."

To quote farther:

"Let us now see what we have omitted to do in order to put our soldiers on an equal footing with any possible antagonist.

"In general, we have had no instruction or training either for individuals or tactical units, in firing or working under approximately battle conditions. The most prominent of these omissions are:

"First, instruction and training of the individual in firing under battle conditions. So far we have only practiced on the target range with all conditions artificial and impossible for actual service. For example, there is nothing more unlike a man in battle than a bull's-eye target. Even the black and immovable silhouette does not represent him very accurately.

"The ground on the range is generally a horizontal plain, which seldom occurs on a battlefield, and if one were encountered, no sensible man would attack over it if he could possibly avoid it. The ranges are all measured and marked, which cannot be expected in war, certainly not for the attack.

"It is an ancient and wise adage that 'practice makes perfect.' Field firing is a simple application of this adage.

"In this we try to use targets that look and act as nearly as possible like men in battle. Khaki-colored silhouettes appearing, disappearing and moving over rough, uneven, wooded ground, always at unknown and constantly changing ranges.

"Every infantryman who has attained the classification of marksman should be put on a field range and given a thorough course in individual field firing. If an infantryman is not a marksman at the end of his second year, he should be transferred to some other branch of the service where his inability to shoot will not so vitally militate against the efficiency of his arm.

"Second. The squad should next be trained in field firing and in working over all kinds of ground under the immediate direction of its corporal. The corporal should fully understand that he is the instructor and leader of his squad, and that he is responsible that the men do not fire without his orders or those of higher authority; that they do not waste their ammunition (in battle every cartridge should be treated as if it were a hundred dollar bill, for which full value must be demanded); that the men always fire with the proper sight; that they get over the ground in any formation that will accomplish the advance with the least loss.

"From this it is evident that the corporal will have enough to do in supervising and controlling his seven privates without firing himself in the early stages of the fight. Therefore our regulations should forbid him to fire as long as the sights have to be set, that is, until the battle-sight comes into use, at 530 yards from the enemy. Even then if he can still continue to control his squad as a unit, he should not fire, for he can do more effective work by directing his men, and he will have all his ammunition to use at the decisive stage of the fight at close range. Lord Roberts said after the war in Africa that the most important stage of the fire fight is within 200 yards of the enemy's trench. At this stage our men must be able to do good snap-shooting at disappearing targets, in order to prevent the enemy from rising

in his trench and firing on them while they are exposed in making the final advance.

"The proper training of squads in this team-work under the corporals, in handling and controlling fire, is the foundation and most important feature in the instruction and practical training of infantry for battle, and should be practiced as much and as frequently as possible.

"Third. The next step is the training in team work of the section of three or four squads under a sergeant; then of the platoon under a lieutenant, and finally, of the entire company under its captain. The company is the highest unit that it is practicable to work in battle under the immediate personal control of an officer. The companies work together in support of each other in battalions, regiments and brigades. The larger the organizations we can work together in practicing attacks under varying conditions, in peace, the greater will be our reasonable prospects for success in war."

He then shows the necessity for more artillery and machine guns to support the infantry and that it has been theoretically decided that we should have 3 75 field guns to 1,000 rifles and a machine gun company of six guns for each regiment of infantry and cavalry, and adds that, "The great battle-team of modern war is the infantry working in coöperation with artillery and machine guns."

It might be added here that the cavalry, although not mentioned in this connection by the lecturer, has its part to play on the field of battle, as well as its proper rôle prior to and after the engagement, and that there should be the hearty coöperation of all three arms to bring about the desired result of victory.

He then proceeds to describe the great team-work of battle and assumes that we have a few infantry divisions, supported by the artillery and machine guns making an attack on an enemy intrenched under good cover and with an almost glacis surface in his front with an uninterrupted field of fire of over one thousand yards. With an enemy of anything like us in strenght and morale, it would seem that such an attack would be foolhardy as was the case he mentions of the attack of the Prussian Guard Corps against the French at St. Privat, over similar ground.

In his assumed case, the machine guns are under cover at 1,200 yards, the 3" field artillery at 2,700 yards, the 4 7" field artillery at 3,500 yards and the 4.7" field howitzers at 4,000 yards from the enemy, the infantry being deployed at a little over 1,000 yards from the enemy.

He then goes on to say:

"If we look over this field from the trench, not a man or a gun should be in sight if the features of the terrain have been properly utilized by the attack. The landscape appears an empty and uninhabited plain, but it is in fact a slumbering volcano. It is perfectly practicable for the attack, after driving in the outposts and pickets of the defense, to occupy this position at night, without betraying the movement to the enemy.

"Let us assume that this is a sector of a line of battle on which it has been decided to deliver an attack. Lines of battle are now many miles in extent. At Mukden the Russian line was sixty miles long. This gives the offensive a wide field of choice in selecting a point of attack. The officer in immediate command of this attack, probably a brigade commander, opens the fight with a sudden burst of artillery and machine-gun fire. Under its protection the infantry advances.

"A glance at the figure shows that the fire of the enemy's trench should be smothered by the fire of four lines of machine fire, that is, fire not delivered by hand weapons, which is almost independent of inaccuracies due to personal and physical shortcomings of individual men. This assumes that the artillery of the defense is neutralized or silenced before the infantry attack is launched. This can only be accomplished by mobilizihg your army with more guns per 1,000 rifles than your enemy. This artillery must be created and trained in peace.

"The theory of supporting the infantry attack during its progress by firing shrapnel over their heads, is believed to have originated with the Germans after their cruel losses in attacks in the Franco Prussian war. They certainly preach

it as a principle and practice it at maneuvers and in field firing. Their theory is that the artillery should keep up its fire over the infantry until they have gotten within 300 yards of the enemy's trench.

"The object in giving this figure and discussion is to show the very intimate relations that will exist between the infantry and the artillery in the attack. They must work together as the fingers of the hand. This is the highest exemplification of the team work of battle.

"The sooner our teams are organized and the more they work together in peace, the better will be our prospects for success in war."

He then discusses the question of the range and shows that no satisfactory range finder has as yet been devised and that the average errors in estimating distances made by trained men in peace and unexcited, not under fire, run from one-tenth at 300 yards to one-sixth at 1,200 yards; that what is wanted is not the exact distance in yards but where to set the rear sight in order to hit the target, our rifle being sighted for firing on the horizontal with a definite thermometer and barometer reading and with no wind.

As to when the infantry should open fire, he states:

"In the attack, infantry should defer the moment of opening fire as long as possible. If they can hold their fire up to 600 yards of the enemy's trench they will begin the fire fight with great advantages on their side. They can then set the sights at the battle range of 530 yards, thus avoiding a fruitful cause of bad shooting due to too high elevations. They will have in their belts the ammunition they would have expended at longer ranges.

"When fire is opened at the longer ranges it is generally a waste of ammunition, the men get out of hand and beyond the control of their officers sooner, it shows nervousness, poor discipline and bad judgment, and correspondingly encourages the enemy by the exhibition of such qualities.

"The great range of the modern rifle is a by-product in the struggle for a flat trajectory, and is a positively objectionable feature if the timid and nervous are to be allowed to try to shoot up their courage by opening fire at ranges

where they do the enemy no damage in proportion to the waste of invaluable ammunition.

"Every practical encouragement and reward should be given troops to advance as near the enemy as possible without opening fire. This is certainly a severe test of both discipline and courage, and should be properly recognized.

"Our Drill Regulations, paragraph 237, teach that fire should be opened at 1,000 yards with apparent disregard as to whether the enemy has opened fire or not, or whether visible or not. This is astonishing advice for an authoratative service manual to offer and might be followed by those coming into battle for the first time if not counter-acted by sane counsel. The situation is simply this: It is a principle of human nature about as universal of application as gravity in physics, that a blow calls a blow and a shot directed at a man with a gun in his hand will be answered by a return bullet. You are advancing in the open on a man lying down in a trench, who has cover, protection, a rest to shoot from and presumably plenty of ammunition. He has every advantage over you in the coming duel. It would seem to be to your advantage to come as near as possible before the first shot is fired. The nearer you can get, the less serious is the question of unknown ranges and sights, and the more ammunition you will have for close quarters when you are more nearly on an equality with him. Nevertheless, when you have arrived at the fateful distance of 1,000 yards, you fire a shot at him. You stir up the hornets' nest, with all advantage on the side of the hornets—not that there is any sense or reason whatsoever in this procedure, but just because the Drill Regulations so ordain."

Regarding the kind of fire, he again criticises our drill regulations as follows:

"The most conspicuous and important lesson to be drawn from the study of battles since the adoption of the magazine rifle, is that the only hope for success for the attack lies in obtaining the preponderance of fire over the defense as soon as possible and maintaining it up to the moment of the bayonet fight if the defense remains in its trench so long.

"In absolute violation of and in opposition to this principle, our regulations teach us to open the fire with one sixth of our force; 'One squad in each platoon fires one round at 1,000 yards.' Just enough to stir up the hornets' nest with no prospect of doing any serious harm. Instead of using every means in our power to obtain the preponderance of fire from the very start, to smother the fire of the enemy's trench as much and as soon as possible, in the successful accomplishment of which lies the only hope, not only of success, but even of existence for the attack, we content ourselves with opening up a gentle drivel of fire, just enough to attract his attention and call upon our heads his return fire, which will probably come in the shape of concentrated, controlled fire delivered from cover and with a rest.

"Again our regulations apparently contemplate the existence of a 'last firing place,' at 200 yards from the enemy's trench, a point at which the last cartridge is fired and after which the attack proceeds to the bayonet encounter without firing. This was a favorite hallucination with the generation of theorists and military composition vendors who had their day before the invention of the magazine rifle. It is now generally accepted that the attack cannot afford to cease its fire on the enemy's trench for one moment until he can be reached with the bayonet without risking destruction.

"Therefore we should teach that infantry should open the fight with a fire sufficiently heavy to smother that of the enemy and should maintain it up to the moment of the bayonet encounter."

Under the head of "Fire Fight," he says:

"The discussion of the fire fight naturally divides itself into three heads—execution, control and direction.

"Execution covers the manner in which the men deliver their fire. This is taught on the target range at bull's eye and field firing targets. If the execution is poor the results in battle will be correspondingly ineffective.

"Fire control is the work of the lieutenants and noncommissioned officers. It consists in transmitting to the men the instructions and orders of the fire directors, and in seeing that they are implicitly obeyed, and especially in seeing that the ammunition is not wasted, and that the proper sight is always used in firing on the designated target. On the thoroughness and efficiency with which they perform this important duty will depend whether we have controlled, concentrated fire or mob fire in battle.

"Fire-direction is generally the duty of company commanders. They receive instructions from the next higher commander as to the direction and character of the fight, and the part their companies are to take in it. The regulations of other countries give great latitude to company commanders in carrying out these instructions. In this respect the French are in advance, as they positively forbid any detailed orders to be given captains as to the manner in which they will carry out their instructions.

"The duties of fire directors cover:

"1. Allot to each platoon a certain portion of the enemy's position at which to fire, so as to distribute the fire of the company over the whole target.

"2. Ascertain the ranges.

"3. Decide when to open fire.

"4. Control the tactical momements of his company.

"5. Watch the movements of the enemy.

"6. Watch the effect of his company's fire.

"7. See that the ammunition sent forward by the battalion commander is properly distributed.

"This is team-work. Like all other team-work it is necessary to success to get the team together, and have as much practice as possible, before the game is called. In war it has been our custom to call the game and then begin to look up the team.

"Our regulations are silent on the important questions of who is responsible for fire-control and fire-direction, and who will decide the moment for opening fire and what knd of fire to use.

"The ideal fire for battle is collective, concentrated, controlled fire, absolutely under the will of the commander. If we have not this, then we have the soldier battle from the start, and have abdicated all the advantages of organization and coöperation so far as fire action is concerned.

"Other nations teach the principles of the fire fight on field ranges, frequently combining the fire of large bodies of infantry with that of field artillery in support. With us, this is still a speculative, theoretical question of the future, and must remain so until we are provided with possible field ranges and proper regulations for field firing."

He further discusses the questions of what our neighbors are doing; schools of musketry; the acquisition of field ranges and in conclusion makes the following recommendations:

"In the early part of this lecture the promise was made that this should not be exclusively a fault-finding essay, without suggesting some practical remedies. To this end the following recommendations are proposed:

"1. That we acquire the necessary land and equip at least six field ranges, viz., three on the Atlantic, two on the Pacific, and one in the Middle West.

"The Government already has several military reservations of sufficient extent to accommodate field ranges — Assinniboine, Riley and Sill. In purchasing land for these ranges the question of density of population should be considered so as to permit a great number of the organized militia to use them. They should be at least 13,000 acres in extent 4x5 miles — 20 square miles — so as to allow artillery to maneuver while having its target practice.

"One of these ranges should be established in the vicinity of Washington, especially equipped to accommodate the National Match. In addition it should be a first class, up-to-date field range in every respect.

"In the matter of practical target ranges and maneuver grounds, we are the most conspicuously deficient nation in the world.

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"2. That we establish a national School of Musketry on the general lines of the French School at Chalon, and that this school be located at Fort Sill, which has the largest and best adapted reservation for the purpose. Also, Fort Sill is the headquarters of a field artillery regiment. One of the principal practical objects of the school should be to promote more intimate relations between infantry and artillery, especially in field firing.

All the proposed field ranges should be to a certain extent practical schools of Musketry, but for the more technical and experimental features of the work we would require but one national or general school, complete in all branches."

"3. That we give the classifications of expert riflemen and sharpshooter, carrying extra pay of five and three dollars per month, respectively, only for excellence in field firing.

"4. That the new Small Arms Firing Regulations prepared by a board of officers at the School of Musketry at Monterey, and which contain a complete scheme for field firing, be approved and issued to the army as soon as possible. The approval of these regulations will of itself stimulate the creation of field ranges by calling attention officially to their universal deficiency in our country.

"5. That the paragraphs of the Infantry Drill Regulations which teach a so-called 'Normal Attack' be revoked by orders, and that in their stead a chapter be substituted teaching the principles of, and giving general instructions for combat, in accordance with the most conspicuous and indisputable experiences of modern war. The publication in a service manual of such erroneous, misleading, and false theories and principles of combat is discreditable to us as an intelligent, progressive, people, recognizing and appreciating the seriousness of war.

"At present we present the anomaly of having the newest and best infantry rifle, while teaching its use in battle by the most antiquated and obsolete drill regulations. The experiences of wars whose histories have been written since the approval of the regulations, make these changes imperative."

CHANGES IN OUR CONSTITUTION.

The attention of our members is asked to the changes in the Constitution of the Cavalry Association, adopted at our last annual meeting and published in the last number of the CAVALRY JOURNAL.

As will be seen from the list of the members of the Sub-Council printed on the sub-title page of this number, but few of the cavalry regiments have selected their regimental representatives on this council. The Executive Committee of the Association believe that this Sub-Council can and will be of great benefit to the Association in assisting them and in advancing its interests by procuring new members from their respective regiments, by securing original articles for publication in the JOURNAL and generally in submitting suggestions procured from the members in their regiments, obtaining votes on propositions up for consideration for the benefit of our branch of the service.

As yet no direct results have followed from the provision of the Constitution permitting non-commissioned officers of cavalry to become associate members of the Association, except in two regiments, or rather in one troop of one regiment and in another regiment; eight having joined from one troop of the Fourteenth Cavalry and seven from among the Fourth Cavalry at Fort Meade. Some of the members of our Executive Council believe this to be an important step and advocate having special attention paid to matters of instruction for our non-commissioned officers, such as problems, etc., as is done in some of the foreign service journals. However, this will not be attempted until the sense of the Association regarding it has been obtained.

The Executive Council has determined under the provisions of Article IX of the Constitution, to publish the JOURNAL bi-monthly, commencing with this number. Accordingly, the numbers will appear hereafter on the first day of July, September, November, January, March and May. This change necessitates, under the requirements of Section 4, Article V, of the Constitution, an advance in the annual dues which will therefore, be hereafter two dollars and fifty cents.

Also, the subscription price for the JOURNAL to non-members will be two dollars and fifty cents, or three dollars for foreign subscribers as required by Section 3, Article V, of the Constitution.

It is hoped that this change as to the frequency of publication will prove to be a success, but to make it so it will be necessary for our members, especially for our regimental members of the Sub-Council to get busy and furnish us with original articles for publication.

OUR BOOK DEPARTMENT.

This department, established only last year, has grown far beyond our expectations. As has been stated before, this departure was taken with a view of publishing and selling the best military books to our members and subscribers at the lowest practicable cost.

While we are glad to serve all officers of the army, yet the department is run primarily for the benefit of the members of the Cavalry Association and subscribers to the CAVALRY JOURNAL and to these we give special prices on such works as we are allowed to sell under list prices, Some dealers and publishers sell particular books with the understanding that they be not sold under the list price.

That those purchasing books through our book department make a no small saving is evidenced by the fact that one officer saved over $20.00 on an order for books amounting to less than one hundred dollars.

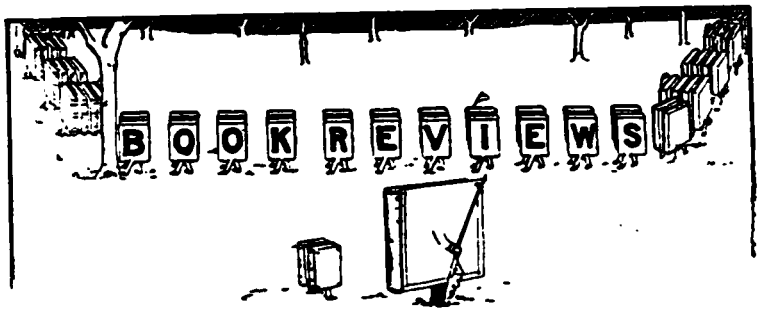
Recently the custom house authorities have been more vigilant and strict in collecting duty on foreign books coming through the mails which has in many cases added greatly to the cost of foreign books. Formerly it was seldom that any duty was charged on any book so imported whereas now it is rare that any escapes paying duty.

Being in touch with all publishers and dealers in military books and having their catalogs, we are prepared to secure any such book now in print and to furnish it generally at

quite a discount from the list price. We also save our members time and trouble in procuring special books on particular subjects as they frequently do not know the publisher and in some instances do not even know the title of the book desired.

The Cavalry Association has recently been appointed the sole agents for the United States for the sale of the English translation of the German official account of the Russo-Japanese War published by Hugh Rees, London, and is prepared to supply dealers and others with copies of the two volumes already issued—The Yalu and Wa-Fan-Gou. The third volume, The Battle of Liao-Yan, is now in press and the fourth, Port Arthur, is in preparation.

Of course we prefer to sell those books which we publish, and handle direct to officers rather than through dealers and it is to their advantage to so buy them as in the latter case the purchaser will be charged full price by the dealer.



The Rifle in War.*

The Cavalry Association has secured for publication what promises to be one of the most important military publications of the year—"The Rifle in War," by Captain Henry E. Eames, Tenth Infantry, an instructor at the Army Service Schools at Fort Leavenworth.

The outlines of this book were published in the form of a pamphlet last year and were used by Captain Eames in his courses on the Munitions of War given to the War College, Staff College and School of the Line. In its completed form it will continue to be used in this connection.

To those who have always regarded range firing as the most important, if not the only necessary preparation for the use of the rifle in battle, the book will come as a surprise and many will regard it as revolutionary, but any one who studies the book seriously cannot but be impressed with the truth of the propositions advanced and with the nececssity for a greater knowledge by the officer and non-commissioned officer of the practical use of the rifle in combat. This is the first publication in the English language wherein the subject of battle shooting is presented in the manner which has

*"THE RIFLE IN WAR." By Captain Henry E. Eames, Tenth Infantry, U. S. A. Published by the U. S. Cavalry Association, 1909. Price, $2.00 postpaid. The book will be ready for distribution about August 1, 1909.

changed all of the target systems of Europe in the past two or three years from the range firing idea with which we are familiar to the practical field firing basis which fits both officer and soldier for that highest expression of their usefulness—the production of an efficient fire in battle.

Each of the factors which modify the effect of fire is separately considered, their absolute and relative value shown and the means of minimizing their bad effect or intensifying their benign influence pointed out. The author discusses the modern method of conducting the "Fire fight," the means whereby that superiority of fire is obtained which late wars have shown to be a prerequisite to success, and the practical use of the various forms and varieties of fire. One chapter illustrates the principles by means of a series of concrete problems in the use of fire such as will confront the troop or company commander in service and which sometimes demand an instant and correct decision as to the character of fire to be delivered in a certain crisis; the "why" of using rapid fire here and fire at will there; "why" the battle sight is used in this case and why in this other combined sights are properly used, etc. Another chapter deals with the methods of instruction used in this new form of rifle practice, with hints for the fire training of the troop or company on unknown or varied ground and away from the target range.

The treatment of this technical subject in such a way as to be readily understandable by the lay reader involves many difficulties, but the necessary mathematical demonstrations are grouped in one part of the text which the reader who accepts the author's deductions can omit, but where the diligent and doubting student may find ample and convincing proof of the correctness of the whole theory.

The growing and intelligent interest in the subject of rifle fire in our army and National Guard assures a widespread interest in this remarkable book (now in press) and it is safe to predict that it will cause the same change here that a similar treatment of the subject has caused in the armies of Europe.

Handbook of Alaska.* This work consists of a collection of reliable data concerning Alaska, from the time of its acquisition by the United States up to the present. The work is not only a collection of valuable historical facts but is of current interest for the prospective merchant, miner, man of business, or traveler. The work deals in detail with the laws, climate, waterways, roads, railroads, mining of various kinds, agriculture, fisheries, the fur seal trade, glaciers, mountains, volcanoes, game, inhabitants, missions and education. An excellent account is given of the army's work from the time that the territory was received from the Russians up to the present. There are excellent bibliographies given at the ends of the chapters, and various tables of dates, temperature, rain, snow, gold production, fur seal industry, glaciers and others. To one familiar with the country the book's value is at once realized, to others it is recommended as one of the most complete and reliable treatise on this broad subject now in print. W. M.

Suggestions to Military Riflemen.† The foundation of an efficient rifle fire unquestionably lies in the careful training of the marksman in time of peace and and it is the purpose of this book to place the underlying principles of rifle fiire before the reader in such a clear and practical way as not only to improve his own shooting but also to prepare him for teaching the art of military rifle shooting to others.

The Author brings to his task the ripe experience of a successful rifleman and there is less of the theoretical and more of the practical than is usual in books of this character. The chapters on the care of the rifle, and on range and skirmish fire are especially valuable and contain inform-

*"HANDBOOK OF ALASKA," by Major General A. W. Greely, U. S. Army, 1909. Charles Scribner's Sons, New York. Price, $2.00 net.

†"SUGGESTIONS TO MILITARY RIFLEMEN." By Lieutenant Townsend Whelen, 29th U. S. Infantry. Revised Edition, 1909. Franklin Hudson Publishing Co., Kansas City, Mo.

ation which, while well enough known to those skilled in military rifle shooting, is "discovered" by the beginner only at the expense of his scores and classification.

The Author's experience in match-shooting leads him to lay rather to much emphasis on the use of the vernier and other refinements generally unavailable to the soldier, but in the main, the book is a valuable assistant either to the soldier seeking a higher classification or to the officer in instructing his men. The book is of a convenient size for use in the field, on the drill ground or on the rifle range.

The Sentinel's Hand Book.*

The fourth edition of this little work of fifty-four pages, by Major John R. McQuigg, Corps of Engineers, Ohio National Guard has just been issued. It is bound in cardboard and is about the size of the Manual of Guard Duty. It is in the form of questions and answers and appears to cover fully all that the sentinel should know in order to properly perform his duty as such.

"The Sentinel's Hand Book tells the enlisted man, in simple and concise language, just what he ought to *know* in order to be a good sentinel, what he ought to *do* and *when* and *how* to do it."

It also treats of the subject of military courtesy in an exhaustive and pleasing manner as well as having a chapter on the United States Magazine Rifle in which the rifle is fully described and gives a mass of information regarding it that is not usually at hand for the guardsman.

*"THE SENTINEL'S HAND BOOK." By Major John R. McQuigg, Corps of Engineers, Ohio National Guard. Fourth Edition, 1909. The Acme Publishing Co., Cleveland, Ohio. Price, 25 cents.

Wa-Fan-Gou*. This, the second of the reports on the Russo-Japanese War prepared by the Historical Section of the German General Staff and translated by Karl von Donat, has just been published.

The first volume of this series, The Yalu, was reviewed in the last number of the CAVALRY JOURNAL and it was hoped and expected that to have a critical review of this volume in the present number. However, owing to a change of station of Captain White who has hitherto reviewed all of the books of this war, for the JOURNAL he has found it impossible to have it ready for this issue.

The third volume of this series, Battle of Liao-Yan, is now in press and others are in preparation. The Cavalry Association has the sole agency for these books in the United States.

The following notice of this work is from the *United Service Magazine:*

It is almost unnecessary to say that this is excellent military history, and that the translator has done his work in manner that deserves high praise. The narrative follows the operations in the minute detail that is customary with those by whom it has been compiled, naturally manifesting also a very thorough understanding of the campaign as a whole, while the assumptions made in order to account for things done or left undone, appear to be, as a rule, warranted by the evidence given in support of them. Yet in some cases it will be found interesting and instructive to compare the explanations supplied by General Kuropatkin himself, in 'The Russian Army and the Japanese War,' with those adopted by the German General Staff. Many readers will, however, be disposed to grumble exceedingly at the illegibility of the maps, the names of places being printed on most of them so faintly that they are very difficult to find. To students, however, who have the time to spare, such difficulties are perhaps advantageous, since care has need to be taken to

*"WA-FAN-GOU AND ACTIONS PRELIMINARY TO LIAO-YAN." Prepared by the Historical Section of the German General Staff and translated by Karl von Donat. Four appendices and eleven maps. Hugh Rees, Ltd., London 1909. Price, $3.00.

ensure that a place when once found on the map shall not advoidably be lost sight of, and the only assurance to this end must obviously be to fix its position clearly in the mind. These maps are pleasing to the artistic eye, but very aggravating to readers of the history who desire to follow the operations as they read.

Grant's Campaigns.*

This new and important work by Lieutenant C. F. Atkinson, Royal fusileers, British Army, is deservedly attracting much attention. It is a critical account of Grant's campaign from May 3d to June 3, 1864, The Wilderness and Cold Harbor.

The title of the book is taken with the expectation that it will be followed by others describing the later phases of the campaigns of the Army of the Potomac.

This work will be reviewed at length in the next number of the JOURNAL.

*"GRANT'S CAMPAIGNS OF 1864 AND 1865—THE WILDERNESS AND COLD HARBOR." By Lieutenant C. F. Atkinson, Royal Fusileers. Hugh Rees, Ltd., London. Price, $2.00.

Publisher's Notices.

WESTERN MILITARY ACADEMY.

The attention of our members and subscribers is invited to the advertisement of this old and well known school which is located at Upper Alton, Illinois.

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The Commandant of Cadets, Major Wilson G. Lowe, is well known to the Editor of the CAVALRY JOURNAL and is a gentleman of sterling character who gives his personal attention to the welfare of the boys entrusted to his care.

It will be to the interest of our officers having boys to educate or prepare for West Point or Annapolis to correspond with Major Lowe.

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The above is the name of a school for girls conducted by Miss Kate C Shipp at Lincolnton, North Carolina, which is situated in the beautiful and healthy Piedmont region of that State.

Miss Shipp is a sister of the late Lieutenant William E. Shipp, Tenth U. S. Cavalry, who fell at San Juan Hill which, other things being equal, should appeal to our officers.

As the school accommodates but twenty-five girls Miss Shipp can and does give her personal attention to the girls under her charge.

Those of our officers who have daughters to educate would do well to correspond with Miss Shipp.

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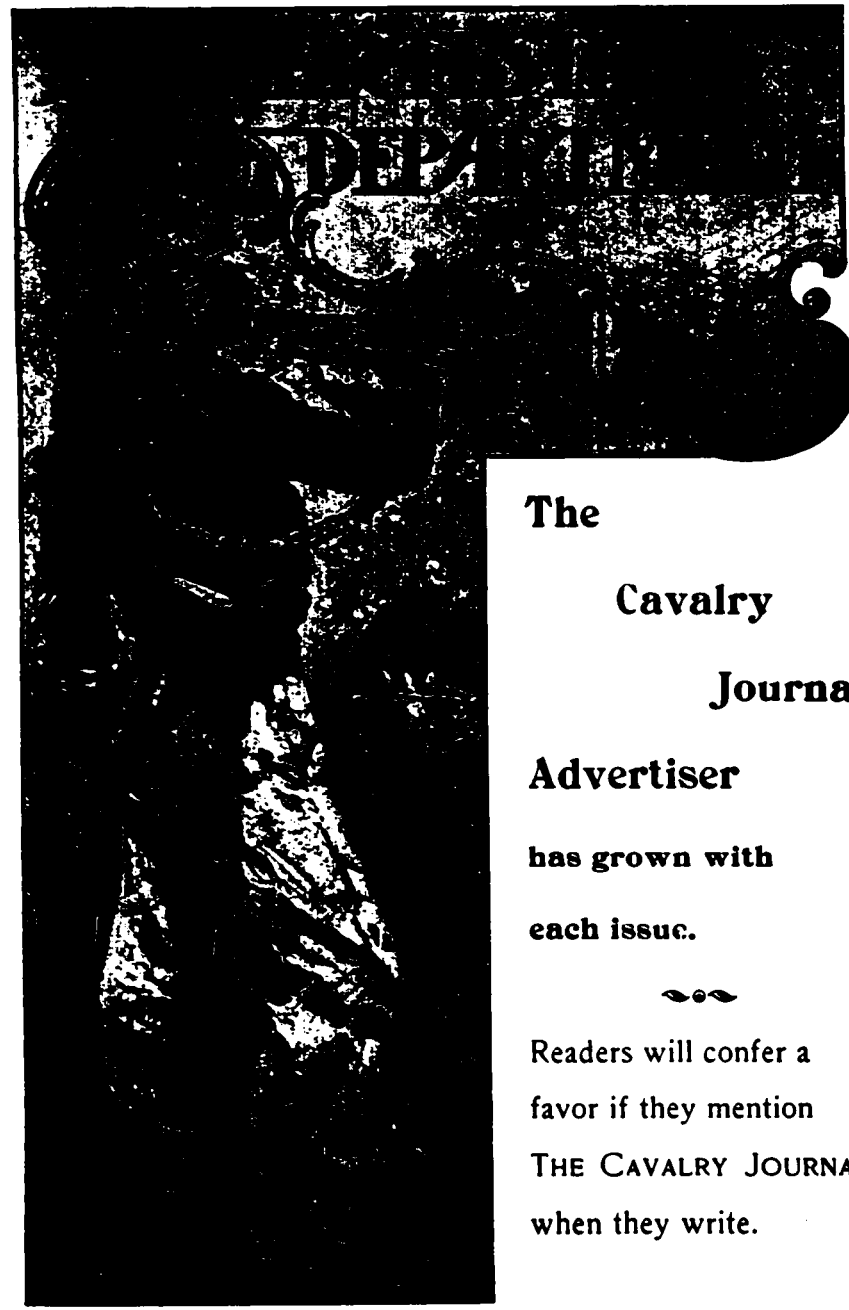

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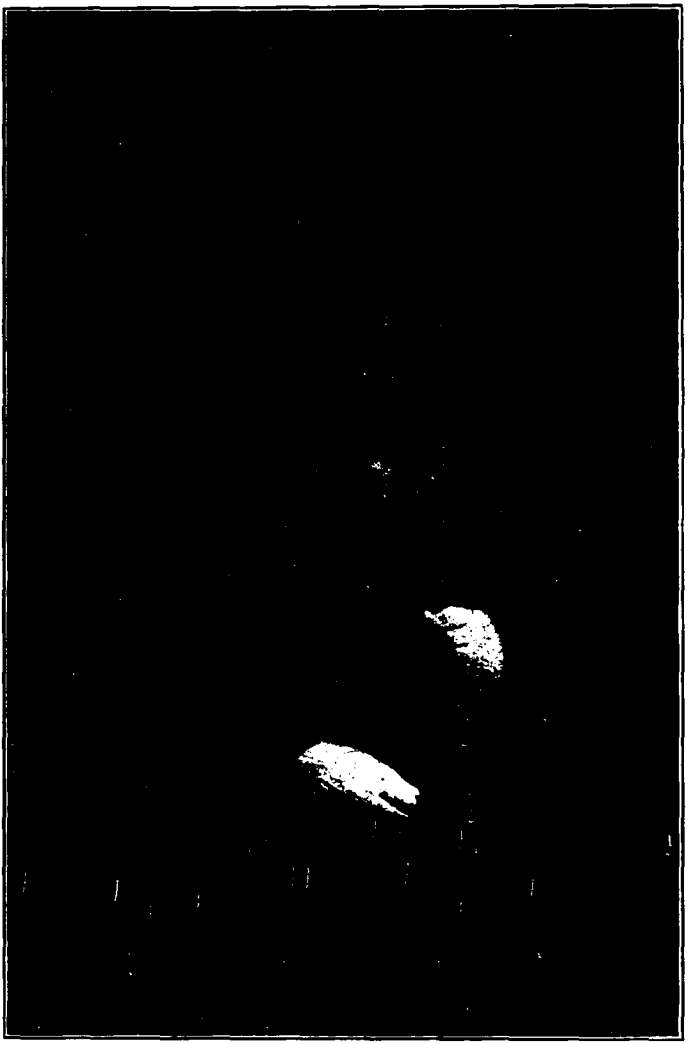

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(First and for many years the President of the West Point Branch of the U. S. Cavalry Association.)

VOL. XX. SEPTEMBER, 1909. No. 74.

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VOL. XX. SEPTEMBER, 1909. No. 74.

THE BATTLE OF GETTYSBURG.*

At the Headquarters, Second Army Corps.
Army of the Potomac, near Harper's Ferry,
July 16, 1863.

THE great battle of Gettysburg is now an event of the past. The composition and strength of the armies, their leaders, the strategy, the tactics, the result, of that field are to-day by the side of those of Waterloo—matters of history. A few days ago these things were otherwise. This great event did not so "cast its shadows before" as to moderate the hot sunshine that streamed upon our preceding march, or to relieve our minds of all apprehension of the result of the second great rebel invasion of the soil north of the Potomac.

No—not many days, since, at times we were filled with fears and forebodings. The people of the country, I suppose, shared the anxieties of the army, somewhat in common with us, but

*This graphic account of the battle of Gettysburg, written only a few days after the battle, has been furnished us by Major General John A. Wiley, National Guard of Pennsylvania. It was in pamphlet form and the name "Haskell" only is appended to the article. It appears that the pamphlet is a reprint from some college magazine, as a footnote states that it was "written by our classmate Haskell," etc.

General Wiley writes that "Haskell was an officer of a Michigan regiment and after the battle of Gettysburg received much recognition and rapid promotion. In the Wilderness he was a colonel and was killed at Cold Harbor. I am informed by his nephew that there was a commission, or notice, of his appointment as Brigadier General in his unopened mail found after his death." An examination of the reports of the

they could not have felt them as keenly as we did. We were upon the immediate theater of events as they occurred from day to day, and were of them. We were the army whose province it should be to meet this invasion and repel it; on us was the responsibility for results, most momentous for good or ill, but yet in the future. And so in addition to the solicitude of all good patriots, we felt that our own honor as men and as an army, as well as the safety of the Capitol and the country, was at stake.

And what if that invasion should be successful, and in the coming battle the Army of the Potomac should be overpowered? Would it not be? When our army was much larger than at present, had rested all winter, and, nearly perfect in all its departments and arrangements, was the most splendid army this continent ever saw, only a part of the rebel force, which it now had to contend with, had defeated it—its leader, rather—at Chancellorsville! Now the rebel had his whole force assembled; he was flushed with recent victory; was *arrogant* in his career of unopposed invasion; at a favorable season of the year, his daring plans, made by no unskilled head, to transfer the war from his own to his enemy's ground, were being successful; he had gone days' march from his front before Hooker moved or was aware of his departure. Then I believe the army in general, both officers and men, had no confidence in Hooker, either in his honesty or ability. Did they not charge him personally with the defeat at Chancellorsville? Were they not still burning with indignation against him for that disgrace? And now again under his leadership they were marching against the enemy! And they knew of nothing, short of the providence of God, that could or would remove him. For many reasons, dur-

battle of Gettysburg made by Generals Gibbon, Hancock, and others indicate that this officer was Lieutenant Frank A. Haskell, Sixth Wisconsin. Of him General Gibbon reports: "I desire to call particular attention to the manner in which several of the subordinate reports mention the services of my gallant aide, Lieutenant F. A. Haskell, Sixth Wisconsin, and to add my testimony of his valuable services." This same officer was killed on June 3, 1864, at Cold Harbor, while in command of the Thirty-sixth Wisconsin, and in their reports of this campaign of the Wilderness. Generals Gibbon, Hancock and several others speak of his gallantry and valuable services and lament his untimely death. EDITOR.

ing the marches prior to the battle, we were anxious and at times heavy at heart.

But the Army of the Potomac was no band of school girls. They were not the men likely to be crushed or utterly discouraged by any mere circumstances in which they might find themselves placed. They had lost some battles—they had gained some. They knew what defeat was, and what was victory. But here is the greatest praise that I can bestow upon them, or upon any army; with the elation of victory, or the depression of defeat, amidst the hardest toils of the campaign, under unwelcome leadership, at all times and under all circumstances, they were a reliable army still. The Army of the Potomac would do as it was told, always.

Well clothed and well fed—there never could be any ground of complaint on these heads—but a mighty work was before them. Onward they moved—night and day were blended—over many a weary mile, through dust and through mud, in the broiling sunshine, in the flooding rain, over steeps, through defiles, across rivers, over last year's battle fields, where the skeletons of our dead brethren by hundreds lay bare and bleaching, weary, without sleep for days, tormented with the newspapers and their rumors that the enemy was in Philadelphia, in Baltimore, in all places where he was not—yet these men could still be relied upon, I believed, when the day of conflict should come. *"Haec olim meminisse juvobit!"* We did not then know this. I mention them now that you may see that in these times we had several matters to think about, and to do, that were not so pleasant as sleeping upon a bank of violets in the shade.

In moving from near Falmouth, Va., the army was formed in several columns, and took several roads. The Second Corps, the rear of the whole, was the last to move, and left Falmouth at daybreak on the 15th of June, and pursued its march through Aquia, Dumfries, Wolf Run Shoals, Centerville, Gainesville, Thoroughfare Gap—this last we left on the 25th, marching back to Haymarket, where we had a skirmish with the cavalry and horse artillery of the enemy—Gum Spring, crossing the Potomac at Edward's Ferry, thence though Poolesville, Frederick, Liberty, and Uniontown. We marched from near Frederick to

Uniontown, a distance of thirty-two miles, from eight o'clock a. m. to nine p. m., on the 28th. I think this is the longest march accomplished in so short a time by a corps during the war. On the 28th, while we were near this latter place, we breathed a full breath of joy and of hope. The providence of God had been with us—we ought not to have doubted it—General Meade commanded the Army of the Potomac!

Not a favorable time, one would be apt to suppose, to change the general of a large army on the eve of battle, the result of which might be to destroy the government and the country. But it should have been done long before; at all events, any change could not have been for the worse, and the administration, therefore, hazarded little in making it now. From this moment my own mind was easy concerning results. I now felt that we had a clear-headed, honest soldier to command the army, who would do his best always—that there would be no repetition of Chancellorsville. Meade was not as much known in the army as many of the other corps commanders, but the officers who knew, all thought highly of him; a man of great modesty, with none of those qualities which are noisy and assuming, and hankering for cheap newspaper fame—not at all of the "*gallant*" Sickles stamp. I happened to know much of General Meade. He and General Gibbon have always been very intimate, and I had seen much of him. I think my own notions concerning General Meade at this time were shared quite generally by the army; at all events, all who knew him shared them.

By this time, by reports that were not mere rumors, we began to hear frequently of the enemy and of his proximity. His cavalry was all about us, making little raids here and there, capturing now and then a few of our wagons, and stealing a good many horses, but doing us really the least amount possible of harm, for we were not by these means impeded at all, and this cavalry gave no information at all to Lee, that he could rely upon, of the movements of the Army of the Potomac. The infantry of the enemy was at this time in the neighborhood of Hagerstown, Chambersburg, and some had been at Gettysburg, possibly were there now. Gettysburg was a point of strategic

importance; a great many roads, some ten or twelve at least, concentrated there, so the army could easily converge to, or, should a further march be necessary, diverge from, this point. General Meade, therefore, resolved to try to seize Gettysburg, and accordingly gave the necessary orders for the concentration of his different columns there. Under the new auspices the army brightened and moved on with a more majestic step toward the yet undefined field of conflict.

The First Corps, General Reynolds, already having the advance, was ordered to push forward rapidly, and take and hold the town, if he could; the rest of the army would assemble to his support. Buford's cavalry co-operated with this corps, and on the morning of the 1st of July found the enemy near Gettysburg and to the west, and promptly engaged him. The First Corps, having bivouacked the night before south of the town, came up rapidly to Buford's support, and immediately a sharp battle was opened with the advance of the enemy. The First Division, General Wadsworth, was the first of the infantry to become engaged; but the other two, commanded respectively by Generals Robinson and Doubleday, were close at hand, and forming the line of battle to the west and northwest of the town, at a mean distance of about a mile away. The battle continued for some hours with various success, which was on the whole with us until near noon. At this time a lull occurred, which was occupied by both sides in supervising and re-establishing the hastilly formed lines of the morning. New divisions of the enemy were constantly arriving and taking up positions, for this purpose marching in upon the various roads that terminate at the town, from the west and north. The position of the First Corps was then becoming perilous in the extreme, but it was improved at a little before noon by the arrival upon the field of two divisions of the Eleventh Corps, General Howard, these divisions commanded respectively by Generals Schurz and Barlow, who, by order, posted their commands to the right of the First Corps, with their right retired, forming an angle with the line of the First Corps. Between three and four o'clock in the afternoon, the enemy, now in overwhelming force, resumed the battle with spirit. The portion of the Eleventh Corps, making ineffectual

opposition to the advancing enemy, soon began to fall back. General Barlow was badly wounded, and their retreat soon became a disorderly rout and panic. They were hotly pursued in their flight through the town, and, owing to their disorganized condition, large numbers fell into the hands of the enemy.

The First Corps, deprived of this support, out-flanked upon either hand, and engaged in front, was compelled to yield the field. Making its last stand upon what is called "Seminary Ridge," not far from the town, it fell back in considerable confusion, through the southwest part of the town, making brave resistance, however, but with considerable loss. The enemy did not see fit to follow, or to attempt to, further than the town, and so the fight of the 1st of July closed here. I suppose our losses during the day would exceed five thousand, of whom a large number were prisoners. Such usually is the kind of loss sustained by the Eleventh Corps. You will remember that the old "Iron Brigade" is in the First Corps, and consequently shared this fight, and I hear their conduct praised on all hands.

In the Second Wisconsin, Colonel Fairchild lost his left arm; Lieutenant-Colonel Stevens was mortally wounded, and Major Mansfield was wounded; Lieutenant-Colonel Collis, of the Seventh Wisconsin, and Lieutenant-Colonel Dudley, of the Nineteenth Indiana, were badly, dangerously wounded, the latter by the loss of his right leg above the knee.

I saw "John Burns," the only citizen of Gettysburg who fought in the battle, and I asked him what troops he fought with. He said, "Oh, I pitched in with them Wisconsin fellers." I asked what sort of men they were, and he answered: "They fit terribly—the Rebs couldn't make anything of them fellers." And so the brave compliment the brave. This man was touched by three bullets from the enemy, but not seriously wounded.

But the loss of the enemy to-day was severe, also—probably in killed and wounded as heavy as our own, but not so great in prisoners. Of these latter the "Iron Brigade" captured almost an entire Mississippi brigade, however.

Of the events so far, of the 1st of July, I do not speak from personal knowledge. I shall now tell my introduction to these events.

At eleven o'clock a. m., on that day, the Second Corps was halted at Taneytown, which is thirteen miles from Gettysburg, south; and there, awaiting orders, the men were allowed to make coffee and rest. At between one and two o'clock in the afternoon, a message was brought to General Gibbon requiring his immediate presence at the headquarters of General Hancock, who commanded the corps. I went with General Gibbon, and we rode at a rapid gallop to General Hancock. At General Hancock's headquarters the following was learned: The First Corps had met the enemy at Gettysburg, and had possession of the town; General Reynolds was badly, it was feared mortally, wounded; the fight of the First Corps still continued. By General Meade's order, General Hancock was to hurry forward and take command upon the field of all troops there, or which should arrive there; the Eleventh Corps was near Gettysburg when the messenger who told of the fight left there, and the Third Corps was marching up, by order, on the Emmetsburg Road. General Gibbon—he was not the ranking officer of the Second Corps after Hancock—was ordered to assume the command of the Second Corps.

All this was sudden, and for that reason, at least, exciting; but there were other elements in this information that aroused our profoundest interest. The great battle that we had so anxiously looked for during so many days had at length opened. It was a relief, in some sense, to have these accidents of time and place established. What would be the result? Might not the enemy fall upon and destroy the First Corps before succor could arrive?

General Hancock with his personal staff, at about two o'clock p m., galloped off towards Gettysburg. General Gibbon took his place in command of the corps, *appointing me his Acting Assistant Adjutant-General.* The Second Corps took arms at once, and moved rapidly towards the field. It was not long before we began to hear the dull booming of the guns; and as we advanced, from many an eminence or opening among the trees we could look out upon the white battery smoke puffing up from the distant field of blood and drifting up to the clouds. At these sights and sounds the men looked more serious than be-

fore, and were more silent; but they marched faster, and straggled less. At about five o'clock p. m., as we were riding along at the head of the column, we met an ambulance, accompanied by two or three wounded officers. We knew them to be staff officers of General Reynolds. Their faces told plainly enough what load the vehicle carried—it was the dead body of General Reynolds. Very early in the action, while seeing personally to the formation of the lines under fire, he was shot through the head by a musket or rifle bullet, and killed almost instantly. His death at this time affected us much, for he was one of the *soldier* generals of the army—a man whose soul was in his country's work, which he did with a soldier's high honor and fidelity.

I remember seeing him after the first battle of Fredericksburg—he then commanded the First Corps—and while Meade's and Gibbon's divisions were assaulting the enemy's works; he was the very beau ideal of the gallant general. Mounted upon a superb black horse, with his head thrown back and his great black eyes flashing fire, he was everywhere upon the field, seeing all things and giving commands in person. He died as many a friend, and many a foe, to the country have died in this war.

Just as the dusk of evening fell, from General Meade the Second Corps have orders to halt where the head of the column then was, and to go into position for the night. The Second Division (Gibbon's) was accordingly put in position upon the left of the (Taneytown) road, its left near the southeastern base of "Round Top"—of which mountain more anon—and the right near the road; the Third Division was posted upon the right of the road, abreast of the Second; and the First Division in rear of these two—all facing towards Gettysburg. Arms were stacked and the men lay down to sleep—alas! Many of them their last but the great final sleep upon the earth.

Late in the afternoon, as we came near the field, from some slightly wounded men we met, and occasional stragglers from the scene of operations in front, we got many rumors, and much disjointed information, of battle, of lakes of blood, of rout and panic and indescribable disaster; from all of which the narrators were just fortunate enough to have barely escaped, the sole survivors. These stragglers are always terrible liars!

About nine o'clock in the evening, while I was yet engaged in showing the troops their positions, I met General Hancock, then on his way from the front to General Meade, who was back towards Taneytown; and he, for the purpose of having me advise General Gibbon, for his information, gave me a quite detailed account of the situation of matters at Getttysburg, and of what had transpired subsequently to his arrival there.

He had arrived and assumed command there, just when the troops of the First and Eleventh Corps, after their repulse, were coming in confusion through the town. Hancock is just the man for such an emergency as this. Upon horseback, I think he was the most magnificent looking general in the whole Army of the Potomac, at that time. With a large, well-shaped person, always dressed with elegance, even upon that field of confusion, he would look as if he was "monarch of all he surveyed," and few of his subjects would dare to question his right to command, or do aught else but obey. His quick eye, in a flash, saw what was to be done, and his voice and his royal hand at once commenced to do it. General Howard had put one of his divisions—Steinwher's—with some batteries, in position, upon a commanding eminence at the "Cemetery," which, as a reserve, had not participated in the fight of the day; and this division was now of course steady. Around this division the fugitives were stopped, and the shattered brigades and regiments, as they returned, were formed upon either flank, and faced toward the enemy again. A show of order, at least, speedily came from chaos. The rout was at an end; the First and Eleventh Corps were in line of battle again—not very systematically formed, perhaps—in a splendid position, and in a condition to offer resistance, should the enemy be willing to try them. These formations were all accomplished long before night. Then some considerable portion of the Third Corps—General Sickles—came up by the Emmittsburg road, and was formed to the left of the Taneytown road, on an extension of the line that I have mentioned; and all of the Twelfth Corps—General Slocum—arriving before night, the divisions were put in position, to the right of the troops already there, to the east of the Baltimore Pike. The enemy was in the town, and behind it, and to the east and west, and appeared to be in strong

force, and was jubilant over his day's success. Such was the posture of affairs as evening came on of the 1st of July. General Hancock was hopeful, and in the best of spirits; and from him I also learned that the reason of halting the Second Corps in its present position was, that it was not then known where, for the coming fight, the line of battle would be formed—up near the town, where the troops then were, or farther back towards Taneytown. He would give his views on this subject to General Meade, which were in favor of the line near the town—the one that was subsequently adopted—and General Meade would determine.

The night before a great pitched battle would not ordinarily, I suppose be a time for much sleep to generals and their staff officers. We needed it enough, but there was work to be done. This war makes strange confusion of night and day! I did not sleep at all that night. It would perhaps be expected, on the eve of such great events, that one should have some peculiar sort of feelings, something extraordinary, some great arousing and excitement of the sensibilities and faculties, commensurate with the event itself; this certainly would be very poetical and pretty, but so far as I am concerned, and I think I can speak for the army in this matter, there was nothing of the kind. Men who have volunteered to fight the battles of the country, had met the enemy in many battles, and had been constantly before them, as have the Army of the Potomac, were too old soldiers, and long ago too well have weighed chances and probabilities, to be so disturbed now. No, I believe the army slept soundly that night, and well; and I am glad the men did, for they needed it.

At midnight General Meade and staff rode by General Gibbon's headquarters, on their way to the field; and in conversation with General Gibbon, General Meade announced that he had decided to assemble the whole army before Gettysburg, and offer the enemy battle there. The Second Corps would move at the earliest daylight, and take up its position.

At three o'clock a. m., of the 2d of July, the sleepy soldiers of the Second Corps were aroused; before six the corps was up to the field, and halted temporarily by the side of the Taneytown road upon which it had marched, while some movements of other

troops were being made, to enable it to take position in the order of battle. The morning was thick and sultry, the sky overcast with low, vapory clouds. As we approached, all was astir upon the crests near the Cemetery, and the work of preparation was speedily going on. Men looked like giants there in the mist, and the guns of the frowning batteries so big that it was a relief to know that they were our friends.

Without a topographical map, some description of the ground and localities is necessary to a clear understanding of the battle. With the sketch that I have rudely drawn, without scale or compass, I hope you may understand my description. The line of battle, as it was established on the evening of the 1st, and morning of the 2d of July, was in the form of the letter "U," the troops facing outwards, and the Cemetery, which is at the point of the sharpest curvature of the line, being due south of the town of Gettysburg. Round Top, the extreme left of the line, is a small, woody, rocky elevation, a very little west of south of the town, and nearly two miles from it. The sides of this are in places very steep, and its rocky summit is almost inaccessible. A short distance north of this is a smaller elevation called "Little Round Top." On the very top of Little Round Top we had heavy rifled guns in position during the battle. Near the right of the line is a small woody eminence, named "Culp's Hill." Three roads come up to the town from the south, which near the town are quite straight, and at the town the extreme ones unite, forming an angle of about sixty or more degrees. Of these the farthest to the east is the Baltimore Pike, which passes by the east entrance to the Cemetery; the farthest to the west is the Emmittsburg road, which is wholly outside of our line of battle, but near the Cemetery is within a hundred yards of it; the "Taneytown Road" is between these, running nearly due north and south, by the eastern base of Round Top, by the western side of the Cemetery, and uniting with the Emmittsburg road between the Cemetery and the town. High ground near the Cemetery is named "Cemetery Ridge."

The Eleventh Corps—General Howard—was posted at the Cemetery, some of its batteries and troops actually among the graves and monuments, which they used for shelter from the

enemy's fire; its left resting upon the Taneytown road, and extending thence to the east, crossing the Baltimore Pike, and then bending backwards towards the southeast; on the right of the Eleventh came the First Corps, now, since the death of General Reynolds, commanded by General Newton, formed in a line curving still more to the south. The troops of these two corps were re-formed on the morning of the 2d, in order that each might be by itself, and to correct some things not done well during the hasty formation here the day before. To the right of the First Corps, and on an extension of the same line, along the crest and down the southeastern slope of Culp's Hill, was posted the Twelfth Corps—General Slocum—its right, which was the extreme right of the line of the army, resting near a small stream called "Rock Run." No changes that I am aware of occurred in the formation of this corps on the morning of the 2d. The Second Corps, after the brief halt that I have mentioned, moved up and took position, its right resting upon the Taneytown road, at the left of the Eleventh Corps, and extending the line thence, nearly half a mile, almost due south, towards Round Top, with its divisions in the following order, from right to left: the Third, General Alex. Hayes; the Second, (Gibbon's) General Harrow (temporarily); the First, General Caldwell. The formation was, in line by brigade in column, the brigades being in column by regiment, with forty paces interval between regimental lines, the Second and Third having each one, and the First Division two brigades. There were four brigades in the First, similarly formed, in reserve, one hundred and fifty paces in the rear of the line of their respective divisions. That is, the line of the corps, exclusive of its reserves, was the length of six regiments, deployed, and the intervals between them, some of which were left wide for the posting of the batteries, and consisted of four common deployed lines, each of two ranks of men; and a little more than one-third was in reserve.

The five batteries, in all twenty-eight guns, were posted as follows: Woodruff's Regular, six twelve-pound Napoleons, brass, between the two brigades in line of the Third Division; Arnold's "A," First Rhode Island, six three-inch Parrotts, rifled, and Cushing's Regular, four three-inch ordnance, rifled, between

the Third and Second Divisions; Hazard's (commanded during the battle by Lieutenant Brown), "B," First Rhode Island, and Rhorty's New York, each six twelve-pound Napoleons, brass, between the Second and First Divisions.

I have been thus specific in the description of the posting and formation of the Second Corps, because they were works that I assisted to perform; and also that the other corps were similarly posted with reference to the strength of the lines, and the intermixing of infantry and artillery. From this, you may get a notion of the whole.

The Third Corps—General Sickles—the remainder of it arriving upon the field this morning, was posted upon the left of the Second, extending the line still in the direction of Round Top, with its left resting near Little Round Top. The left of the Third Corps was the extreme left of the line of battle, until changes occurred which will be mentioned in the proper place. The Fifth Corps—General Sykes—arriving on the Baltimore Pike about this time, was massed there near the line of battle, and held in reserve until sometime in the afternoon, when it changed position, as I shall describe.

I cannot give a detailed account of the cavalry, for I saw but little of it. It was posted near the wings, and watched the roads and movements of the enemy upon the flanks of the army, but further than this participated but little in the battle. Some of it was also used for guarding the trains, which were far to the rear. The artillery reserve, which consisted of a good many batteries, though I cannot give the number, or the number of guns, was posted between the Baltimore Pike and the Taneytown Road, on very nearly the centre of a direct line passing through the extremities of the wings. Thus it could be readily sent to any part of the line. The Sixth Corps—General Sedgwick—did not arrive upon the field until sometime after noon; but it was now not very far away, and was coming up rapidly upon the Baltimore Pike. No fears were entertained that "Uncle John," as his men call General Sedgwick, would not be in the right place at the right time.

These dispositions were all made early, I think before eight o'clock in the morning; skirmishers were posted well out all

around the line, and all put in readiness for battle. The enemy did not yet demonstrate himself. With a look at the ground now, I think you may understand the movement of the battle. From Round Top, by the line of battle, round to the extreme right, I suppose is about three miles. From this same eminence to the Cemetery extends a long ridge or hill—more resembling a great wave than a hill, however—with its crest, which was the line of battle, quite direct between the points mentioned. To the west of this, that is, towards the enemy, the ground falls away, by a very gradual descent, across the Emmittsburg Road, and then rises again, forming another ridge, nearly parallel to the first, but inferior in altitude, and something over a thousand yards away. A belt of woods extends partly along this second ridge, and partly farther to the west, at distances of from one thousand to thirteen hundred yards away from our line. Between these ridges, and along their slopes, that is, in front of the Second and Third Corps, the ground is cultivated, and is covered with fields of wheat, now nearly ripe, with grass and pastures, with some peach orchards, with fields of waving corn, and some farmhouses and their out-buildings along the Emmittsburg road. There are very few places within the limits mentioned where troops or guns could move concealed. There are some oaks, of considerable growth, along the position of the right of the Second Corps—a group of small trees, sassafras and oak, in front of the right of the Second Division of this corps, also; and considerable woods immediately in front of the left of the Third Corps, and also to the west of, and near Round Top. At the Cemetery, where is Cemetery Ridge, to which the line of the Eleventh Corps conforms, is the highest point in our line, except Round Top. From this the ground falls quite abruptly to the town, the nearest point of which is some five hundred yards away from the line, and is cultivated, and checkered with stone fences. The same is the character of the ground occupied by, and in front of the left of the First Corps, which is also on a part of Cemetery Ridge. The right of this corps, and the whole of the Twelfth, are along Culp's Hill, and in woods, and the ground is very rocky, and in some places in front precipitous—a most admirable position for defence from an attack in

front, where, on account of the woods, no artillery could be used with effect by the enemy. Then these last three mentioned corps had, by taking rails, by appropriating stone fences, by felling trees, and digging the earth, during the night of the 1st of July, made for themselves excellent breastworks, which were a very good thing indeed. The position of the First and Twelfth Corps was admirably strong, therefore. Within the line of battle is an irregular basin, somewhat wooded and rocky in places, but presenting few obstacles to the moving of troops and guns, from place to place along the lines, and also affording the advantage that all such movements, by reason of the surrounding crests, were out of view of the enemy. On the whole this was an admirable position to fight a defensive battle—good enough, I thought, when I saw it first, and better, I believe, than could be found elsewhere in a circle of many miles. Evils, sometimes at least, are blessings in disguise, for the repulse of our forces, and the death of Reynolds, on the 1st of July, with the opportune arrival of Hancock to arrest the tide of fugitives and fix it on these heights, gave us this position. Perhaps the position gave us the victory.

On arriving upon the field General Meade established his headquarters at a shabby little farmhouse on the left of the Taneytown Road, the house nearest the line and a little more than five hundred yards in rear of what became the centre of the position of the Second Corps—a point where he could communicate readily and rapidly with all parts of the army. The advantages of this position, briefly, were these: the flanks were quite well protected by the natural defences there—Round Top upon the left, and rocky, steep, untraversable ground upon the right. Our line was more elevated than that of the enemy, consequently our artillery had a greater range and power than theirs. On account of the convexity of our line, every part of the line could be reinforced by troops having to move a shorter distance than if the line were straight; further, for the same reason, the line of the enemy must be concave and consequently longer, and, with an equal force, thinner, and so weaker, than ours. Upon those parts of our line which were wooded, neither we nor the

enemy could use artillery; but they were so strong by nature, aided by art, as to be readily defended by a small against a very large body of infantry. Where the line was open, it had the advantage of having open country in front; consequently the enemy could not surprise us; we were on a crest, which besides the other advantages that I have named, had this: the enemy must advance to the attack up an ascent, and must therefore move slower and be, before coming upon us, longer under our fire, as well as more exhausted. These and some other things rendered our position admirable for a defensive battle.

So, before a great battle, was ranged the Army of the Potomac. The day wore on, the weather still sultry, and the sky overcast, with a mizzling effort at rain. When the audience has all assembled, time seems long until the curtain rises: so to-day. "Will there be a battle to-day?" "Shall we attack them?" "Will they attack us?" These and similar questions, later in the morning, were thought and asked a million times.

Meanwhile, on our part all was put in the best state of readiness for battle. Surgeons were busy riding about, selecting eligible places for hospitals, and hunting streams and springs and wells. Ambulances and ambulance men were brought up near the lines, and stretchers gotten ready for use. Who of us could tell but that he would be the first to need them? The Provost Guards were busy driving up all the stragglers and causing them to join their regiments. Ammunition wagons were driven to suitable places, and pack mules bearing boxes of cartridges, and the commands were informed where they might be found. Officers were sent to see that the men had each his hundred rounds of ammunition. Generals and their staffs were riding here and there among their commands to see that all was right. A staff officer or an orderly might be seen galloping furiously in the transmission of some order or message. All, all was ready, and yet the sound of no gun had disturbed the air or ear to-day.

Here let me state that according to the best information that I could get, I think a fair estimate of the enemy's force engaged in this battle would be a little upwards of a hundred thousand men of all arms. Of course we cannot now know, but there are reasonable data for this estimate. At all events there was no

disparity of numbers in the two opposing armies. We thought the enemy to be somewhat more numerous than we, and he probably was. But if ninety-five men should fight with a hundred and five, the latter would not always be victorious, and slight numerical differences are of much less consequence in great bodies of men. Skillful generalship and good fighting are the jewels of war. These concurring are difficult to overcome; and these, not numbers, must determine this battle.

During all the morning, and the night, too, the skirmishers of the enemy had been confronting those of the Eleventh, First, and Twelfth Corps. At the time of the fight of the 1st he was seen in heavy force north of the town; he was believed to be now in the same neighborhood in full force. But from the woody character of the country, and thereby the careful concealment of troops, which the enemy is always sure to effect, during the early part of the morning almost nothing was actually seen by us of the invaders of the North. About nine o'clock in the morning, I should think, our glasses began to reveal them at the west and northwest of the town, a mile and a half away from our lines. They were moving toward our left, but the woods of Seminary Ridge so concealed them that we could not make out much of their movements. About this time some rifled guns in the Cemetery at the left of the Eleventh Corps opened fire—almost the first shots of any kind this morning; and when it was found they were firing at a line of skirmishers merely, that were advancing upon the left of that and the right of the Second Corps, the officer in charge of the guns was ordered to cease firing, and was rebuked for having fired at all. These skirmishers soon engaged those of the right of the Second Corps, who stood their ground and were reinforced to make the line entirely secure. Their skirmish line kept extending farther and farther to their right, towards our left; they would dash up close upon ours, and sometimes drive them back a short distance, in turn to be repulsed themselves: and so they continued to do until their right was opposite the extreme left of the Third Corps. By these means they had ascertained the position and extent of our line, but their own masses were still out of view. From the time that the firing commenced, as I have mentioned, it

was kept up by the skirmishers until quite noon, often briskly, but with no definite results further than those mentioned, and with no considerable show of infantry on the part of the enemy to support. There was a farmhouse and out-buildings in front of the Third Division of the Second Corps, at which the skirmishers of the enemy had made a dash and dislodged ours posted there; and from this their sharpshooters began to annoy our line of skirmishers, and even the main line, with their long-range rifles. I was up to the line, and a bullet from one of the rascals hid there hissed by my cheek so close that I felt the movement of the air distinctly. And so I was not at all displeased when I saw one of our regiments go down and attack and capture the house and buildings and several prisoners, after a spirited little fight, and by General Hayes' order, burn the buildings to the ground.

About noon the Signal Corps, from the top of Little Round Top, with their powerful glasses, and the cavalry at our extreme left, began to report the enemy in heavy force making dispositions of battle to the west of Round Top and opposite to the left of the Third Corps. Some few prisoners had been captured, some deserters from the enemy had come in, and from all sources by this time we had much important and reliable information of the enemy, of his dispositions and apparent purposes. Their infantry consisted of three army corps, each consisting of three divisions. Longstreet, Ewell—the same whose leg Gibbon's shell had knocked off at Gainesville on the 28th of August last year—and A. P. Hill, each in their service having the rank of lieutenant-general, were the commanders of these corps. Longstreet's division commanders were Hood, McLaws and Pickett; Ewell's were Rhodes, Early and Johnson; and Hill's were Pender, Heath and Anderson. Stewart and Fitz Lee commanded divisions of cavalry. The rank of these division commanders, I believe, was that of major-general. They had about as much artillery as we did, but we never thought much of this arm in the hands of our adversaries. They have courage enough, but not the skill to handle it well. They generally fire too high, and their ammunition is assuredly of a very inferior quality. And of late we have begun to despise the enemy's cavalry, too; it used to have

enterprise and dash, but in the late cavalry contests ours has always been the victor, and so now we think that about all their cavalry is fit for is to steal a few of our mules occasionally and their negro drivers. The infantry of their army, however, is good—to deny this is useless. I never had any desire to; and if one should count up, it would possibly be found that they have gained more victories over us than we have over them; and they will now, doubtless, fight well, even desperately. And it is not horses or cannon that will determine the result of this confronting of the two armies, but the men with the muskets must do it—the infantry must do the sharp work. So we watched all this posting of forces as closely as possible, for it was a matter of vital interest to us, and all information relating to it was hurried to the commander of the army. Their line of battle was concave, bending around our own, with the extremities of the wings opposite to or a little outside of ours. Longstreet's Corps was upon their right, Hill's in the center, these two corps occupied the second or inferior ridge to the west of our position, as I have mentioned, with Hill's left bending towards and resting near the town, and Ewell's was upon their left, his troops being in and to the east of the town. This last corps confronted our Twelfth, First, and the right of the Eleventh Corps. When I have said ours was a good *defensive* position, this is equivalent to saying that that of the enemy was not a good *offensive* one, for these are relative terms and cannot be both predicated of the respective positions of the two armies at the same time. The reasons that theirs was not a good offensive position are the same already stated of ours for defence. Excepting occasionally for a brief time during some movement of the troops, or when advancing to attack, their men and guns were kept constantly and carefully, by woods and inequalities of grounds, out of our view.

Noon is past, one o'clock is past, and, save the skirmishing that I have mentioned, and an occasional shot from our guns, at something or other of the nature of which the ones who fired it were ignorant, there was no fight yet. Our arms were still stacked, and the men were at ease. As I looked upon those interminable rows of muskets along the crests, and saw how cool and good-spirited the men were, who were lounging about on

the ground among them, I could not, and did not, have any fears as to the result of the battle. The storm was near, and we all knew it by this time, which was to rain death upon these crests and down these slopes, and yet the men who could not, and would not, escape it, were as calm and cheerful generally as if nothing unusual were about to happen! You see, these men were veterans, and had been in such places so often that they were accustomed to them. But I was well pleased with the tone of the men to-day; I could almost see the foreshadowing of victory upon their faces, I thought. And I thought, too, as I had seen the mighty preparations go on to completion for this great conflict, the marshalling of these two hundred thousand men and the guns, of the hosts that now but a narrow valley divided, that to have been in such a battle, and to survive on the side of the victors, would be glorious. Oh, the world is most unchristian yet!

Somewhat after one o'clock p. m.—the skirmish firing had nearly ceased now—a movement of the Third Corps occurred, which I shall describe. I cannot conjecture the reason of this movement. From the position of the Third Corps, as I have mentioned, to the second ridge west, the distance is about a thousand yards, and there the Emmittsburg road runs near the crest of the ridge. General Sickles commenced to advance his whole corps, from the general line, straight to the front, with a view to occupy this second ridge along and near the roads. What his purpose could have been is past conjecture. It was not ordered by General Meade, as I heard him say, and he disapproved of it as soon as it was made known to him. Generals Hancock and Gibbon, as they saw the move in progress, criticised its propriety sharply, as I know, and foretold quite accurately what would be the result. I suppose the truth probably is that General Sickles supposed he was doing for the best; but he was neither born nor bred a soldier. But this move of the Third Corps was an important one—it developed the battle; the results of the move to the corps itself we shall see. Oh, if this corps had kept its strong position upon the crest, and, supported by the rest of the army, had waited for the attack of the enemy!

It was magnificent to see these ten or twelve thousand men

—they were good men—with their batteries, and some squadrons of cavalry upon the left flank, all in battle order, in several lines, with flags streaming, sweep steadily down the slope, across the valley, and up the next ascent, towards their destined position! From our position we could see it all. In advance Sickles pushed forward his heavy line of skirmishers, who drove back those of the enemy, across the Emmittsburg road, and thus cleared the way for the main body. The Third Corps now became the absorbing object of interest of all eyes. The Second Corps took arms; and the First Division of this corps was ordered to be in readiness to support the Third Corps, should circumstances render support necessary. As the Third Corps was the extreme left of our line, as it advanced, if the enemy was assembling to the west of Round Top with a view to turn our left, as we had heard, there would be nothing between the left flank of the corps and the enemy; and the enemy would be square upon its flank by the time it had attained the road. So when this advance line came near the Emmittsburg road, and we saw the squadrons of cavalry mentioned come dashing back from their position as flankers, and the smoke of some guns, and we heard the reports, away to Sickles' left, anxiety became an element in our interest in these movements. The enemy opened slowly at first, and from long range; but he was square upon Sickles' left flank. General Caldwell was ordered at once to put his division—the First of the Second Corps, as mentioned—in motion, and to take post in the woods at the west slope of Round Top, in such a manner as to resist the enemy should he attempt to come around Sickles' left and gain his rear. The division moved as ordered, and disappeared from view in the woods, towards the point indicated, at between two and three o'clock p. m., and the reserve brigade—the First, Colonel Heath temporarily commanding—of the Second Division was thereupon moved up, and occupied the position vacated by the Third Division. About the same time the Fifth Corps could be seen marching by the flank from its position on the Baltimore Pike, and in the opening of the woods heading for the same locality where the First Division of the Second Corps had gone. The Sixth Corps had now come up, and was halted upon the Baltimore Pike. So the plot thickened. As the enemy opened upon Sickles with his batteries, some five or six in all,

firing slowly, Sickles, with as many, replied, and with much more spirit. The artillery fire became quite animated, soon; but the enemy was forced to withdraw his guns farther and farther away, and ours advanced upon him. It was not long before the cannonade ceased altogether, the enemy having retired out of range, and Sickles, having temporarily halted his command, pending this, moved forward again to the position he desired, or nearly that.

It was now about five o'clock, and we shall soon see what Sickles gained by his move. First we have more artillery firing upon Sickles' left—the enemy seems to be opened again; and as we watched, their batteries seem to be advancing there. The cannonade is soon opened again, and with great spirit upon both sides. The enemy's batteries press those of Sickles, and pound the shot upon them, and this time they in turn begin to retire to positions nearer the infantry. The enemy seems to be fearfully in earnest, this time. And what is more ominous than the thunder or the shot of his advancing guns, this time, in the intervals between his batteries, far to Sickles' left, appear the long lines and the columns of their infantry, now unmistakably moving out to the attack. The position of the Third Corps became at once one of great peril, and it is probable that its commander by this time began to realize his true situation. All was astir now on our crest. Generals and their staffs were galloping hither and thither; the men were all in their places, and you might have heard the rattle of ten thousand ramrods, as they drove home and "thugged" upon the little globes and cones of lead. As the enemy was advancing upon Sickles' flank, he commenced a change, or at least a partial one, of front, by swinging back his left and throwing forward his right, in order that his lines might be paralled to those of his adversary, his batteries meantime doing what they could to check the enemy's advance; but this movement was not completely executed before new batteries opened upon Sickles' right flank—his former front—and in the same quarter appeared their infantry also.

Now came the dreadful battle picture, of which we for a time could be but spectators. Upon the front and right flank of Sickles came sweeping the infantry of Longstreet and Hill. Hitherto there had been skirmishing and artillery practice—now

the battle begins; for amid the heavier smokes and longer tongues of flame of the batteries, now began to appear the countless flashes, and the long, fiery sheets of the muskets, and the rattle of the volleys mingled with the thunder of the guns. We see the long gray lines come sweeping down upon Sickles' front, and mix with the battle smoke; now the same colors emerge from the bushes and orchards upon his right, and envelop his flank in the confusion of the conflict. Oh, the din and the roar of these thirty thousand wolf-cries of the enemy! What a hell is there down that valley! These ten or twelve thousand men of the Third Corps fight well, but it soon becomes apparent that they must be swept from the field, or perish there where they are doing so well, so thick and overwhelming a storm of the enemy's fire involves them. But these men, such as ever escape, must come from that conflict as best they can. To move down and support them there with other troops is out of the question, for this would be to do as Sickles did, to relinquish a good position, and advance to a bad one. There is no other alternative—the Third Corps must fight itself out of its position of destruction! What was it ever put there for?

In the meantime some other dispositions must be made to meet the enemy, in the event that Sickles is overpowered. With this corps out of the way, the enemy would be in a position to advance upon the line of the Second Corps, not in a line parallel with its front, but they would come obliquely from the left. To meet this contingency the left of the Second Division of the Second Corps is thrown back slightly, and two regiments, the Fifteenth Massachusetts—Colonel Ward—and the Eighty-second New York—Lieutenant Colonel Horton—are advanced down to the Emmittsburg road, to a favorable position nearer us than the fight has yet come, and some new batteries from the artillery reserve are posted upon the crest near the left of the Second Corps. This was all General Gibbon could do. Other dispositions were made, or were now being made, upon the field, which I shall mention presently. The enemy is still giving Sickles fierce battle—or rather the Third Corps, for Sickles has been borne from the field minus one of his legs, and General Birney now commands—and we of the Second Corps, a thousand yards away, with our guns and men, are, and must be, idle spectators of the

fight. The enemy, as anticipated, tries to gain the left of the Third Corps, and for this purpose is now moving into the woods at the west of Round Top. We knew what he would find there. No sooner had the enemy gotten a considerable force into the woods mentioned, in the attempted execution of his purpose, than the roar of the conflict was heard there also. The Fifth Corps and the First Division of the Second were there at the right time, and promptly engaged him; and then, too, the battle soon became general and obstinate. Now the roar of battle has become twice the volume that it was before, and its rage extends over more than twice the space. The Third Corps has been pressed back considerably, and the wounded are streaming to the rear by hundreds, but still the battle there goes on, with no considerable abatement on our part. The field of actual conflict was now from a point to the front of the left of the Second Corps, away down to the front of Round Top, and the fight rages with the greatest fury. The fire of artillery and infantry and the yells of the enemy fill the air with a mixture of hideous sounds.

When the First Division of the Second Corps first engaged the enemy, for a time it was pressed back somewhat, but under the able and judicious management of General Caldwell, and the support of the Fifth Corps, it speedily ceased to retrograde, and stood its ground; and then there followed a time, after the Fifth Corps became well engaegd, when from appearances we hoped the troops already engaged would be able to check entirely, or repulse, the further assault of the enemy. But fresh bodies of the enemy continued to advance out of the woods to the front of the position of the Third Corps, and to swell the numbers of the assailants of this already hard pressed command. The men there begin to show signs of exhaustion—their ammunition must be nearly expended—they have now been fighting more than an hour, and against greatly superior numbers. From the sound of the fighting at the extreme left, and the place where the smoke rises above the tree-tops there, we know that the Fifth Corps is still steady, and holding its own there; and as we see the Sixth Corps now marching and near at hand to that point, we have no fears for the left—we have more apparent reason to fear for

ourselves. The Third Corps is being overpowered—here and there its lines begin to break—the men begin to pour back to the rear in confusion—the enemy are close upon them and among them—organization is lost, to a great degree—guns and caissons are abandoned and in the hands of the enemy—the Third Corps, after a heroic but unfortunate fight, is being literally swept from the field. That corps gone, what is there between the Second Corps and those yelling masses of the enemy? Do you not think that by this time we began to feel a personal interest in this fight? We did, indeed. We had been mere observers of all this—the time was at hand when we must be actors in this drama.

Up to this hour General Gibbon had been in command of the Second Corps, since yesterday, but General Hancock, relieved of his duties elsewhere, now assumed command. Five or six hundred yards away the Third Corps was making its last opposition; and the enemy was hotly pressing his advantage there, and throwing in fresh troops whose line extended still more along our front, when Generals Hancock and Gibbon rode along the lines of their troops; and at once cheer after cheer rang out along the line, above the roar of battle, for "Hancock" and "Gibbon," and our "Generals." These were good. Had you heard their voices, you would have known these men would fight. Just at this time we saw another thing that made us glad: we looked to our rear, and there, and all up the hillside, which was the rear of the Third Corps before it went forward, were rapidly advancing large bodies of men from the extreme right of our line of battle, coming to the support of the part now so hotly pressed. There was the whole Twelfth Corps, with the exception of about one brigade, that is, the larger portions of the divisions of Generals Williams and Geary, the Third Division of the First Corps—General Doubleday—and some other brigades from the same corps; and some of them were moving at the double quick. They formed lines of battle at the foot of the hill by the Taneytown road, and when the broken fragments of the Third Corps were swarming by them towards the rear, without halting or wavering they came swiftly up, and with glorious old cheers, under fire, took their places on the crest in line of battle to the left of the Second Corps. Now Sickles' blunder is repaired.

The battle still rages all along the left, where the Fifth Corps is, and the west slope of Round Top is the scene of the conflict; and nearer us there was but short abatement as the last of the Third Corps retired from the field, for the enemy is flushed with his success—he has been throwing forward brigade after brigade, and division after division, since the battle began, and his advancing line now extends almost as far to the right as the right of the Second Division of the Second Corps. The whole slope in our front is full of them; and in various formation, in line, in column, and in masses which were neither, with yells, and thick volleys, they are rushing towards our crest. The Third Corps is out of the way. Now we are in for it. The battery men are ready by their loaded pieces. All along the crest is ready. Now Arnold and Brown—now Cushing and Woodruff and Rhorty! You three shall survive to-day! They drew the cords that move the friction primers, and gun after gun, along the batteries, in rapid succession, leaped where it stood, and bellowed its canister upon the enemy. The enemy still advance. The infantry open fire—first the two advance regiments, the Fifteenth Massachusetts and the Eighty-second New York, then here and there throughout the length of the long line at the points where the enemy comes nearest, and soon the whole crest, artillery and infantry, is one continued sheet of fire. From Round Top to near the Cemetery stretches an uninterrupted field of conflict. There is a great army upon each side, now hotly engaged.

To see the fight, while it went on in the valley below us, was terrible; what must it be now when we are in it, and it is all around us, in all its fury? All senses, for the time, are dead but the one of sight. The roar of the discharges and the yells of the enemy all pass unheeded; but the impassioned soul is all eyes, and sees all things that the smoke does not hide. How madly the battery men are driving the double charges of canister in those broad-mouthed Napoleons, whose fire seems almost to reach the enemy. How rapidly those long blue-coated lines of infantry deliver their file fire down the slope! But there is no faltering—the men stand nobly to their work. Men are dropping, dead or wounded, on all sides, by scores and by hundreds; and the poor mutilated creatures, some with an arm dangling, some with a leg broken by a bullet, are limping and crawling towards the rear.

They make no sound of complaint or pain, but are as silent as if dumb and mute. A sublime heroism seems to pervade all, and the intuition that to lose that crest, all is lost. How our officers in the work of cheering on and directing the men are falling! We have heard that General Zook and Colonel Cross, in the First Division of our corps, are mortally wounded—they both commanded brigades—now near us Colonel Ward of the Fifteenth Massachusetts—he lost a leg at Ball's Bluff—and Lieutenant-Colonel Horton of the Eighty-second New York, are mortally struck while trying to hold their commands, which are being forced back; Colonel Revere, Twentieth Massachusetts, grandson of old Paul Revere, of the Revolution, is killed, Lieutenant-Colonel Max Thoman, commanding Fifty-ninth New York, is mortally wounded, and a host of others that I cannot name. These were of Gibbon's division. Lieutenant Brown is wounded among his guns—his position is a hundred yards in advance of the main line—the enemy is upon his battery, and he escapes, but leaves three of his six guns in the hands of the enemy.

The fire all along our crest is terrific, and it is a wonder how anything human could have stood before it; and yet the madness of the enemy drove them on, clear up to the muzzles of the guns, clear up to the lines of our infantry—but the line stood right in their places. General Hancock with his aides rode up to Gibbon's division, under the smoke. General Gibbon, with myself, was near, and there was a flag dimly visible, coming towards us from the direction of the enemy. "Here, what are these men falling back for?" said Hancock. The flag was no more than fifty yards away, but it was the head of the enemy's column, which at once opened fire with a volley. Lieutenant Miller, General Hancock's aide, fell twice, struck, but the general was unharmed, and he told the First Minnesota, which was near, to drive these people away. That splendid regiment, the less than three hundred that are left out of fifteen hundred that it has had, swings around upon the enemy, gives them a volley in their faces, and advances upon them with the bayonet. The enemy fled in confusion; but Colonel Colville, Lieutenant-Colonel Adams, and Major Downie are all badly, dangerously wounded, and many

of the other officers and men will never fight again. More than two-thirds fell.

Such fighting as this cannot last long; it is now near sundown, and the battle has gone on wonderfully long already. But if we will stop to notice it, a change has occurred. The enemy's cry has ceased, and the men of the Union begin to shout there, under the smoke, and their lines to advance. See, the enemy's lines are breaking! They are in confusion in all our front! The wave has rolled upon the rock, and the rock has smashed it. Let us shout too!

First upon their extreme left the enemy broke, when they had almost pierced our lines; thence the repulse extended rapidly to their right; they hung longest about Round Top, where the Fifth Corps punished them; but in a space of time incredibly short, after they first gave signs of weakness, the whole force of their assault, along the whole line, in spite of waving red flags, and yells, and the entreaties of officers, fled like chaff before the whirlwind, back down the slope, over the valley, across the Emmittsburg road, shattered, without organization, in utter confusion, fugitive into the woods, and victory was with the arms of the Republic. Their great assault, the greatest ever made upon this continent, has been made and signally repulsed, and upon this part of the field the fight of to-day is now soon over. Pursuit was made as rapidly and as far as was practicable; but owing to the proximity of night, and the long distance which would have to be gone over before any of the enemy, where they would be likely to halt, could be overtaken, further success was not attainable to-day. When the rout first commenced, a large number of prisoners, some thousands at least, were captured; almost all their dead, and such of their wounded as could not themselves get to the rear, were within our lines; several of their flags were gathered up, and a good many thousand muskets, some nine or ten guns and some caissons lost by the Third Corps, and the three of Brown's battery—these last were in the enemy's hands but a few minutes—were all safe now with us, the enemy having had no time to take them off.

Not less, I estimate, than twenty thousand men were killed or wounded in this fight. Our own loss must have been nearly half this number—about five thousand in the Third Corps, fully

two thousand in the Second, and I think two thousand in the Fifth; and I think the losses of the First, Twelfth, and the little more than a brigade of the Sixth—all of that corps which was actually engaged—would reach nearly two thousand more. Of course it will never be possible to know the numbers upon either side who fell in this particular part of the general battle, but from the position of the enemy, and his numbers, and the appearance of the field, his loss must have been as heavy as, I think much heavier, than our own; and my estimates are probably short of the actual loss.

The fight done, the sudden revulsions of sense and feeling follow, which more or less characterize all similar occasions. How strange the stillness seems! The whole air roared with the conflict but a moment since—now all is silent; not a gun-shot sound is heard, and the silence comes distinctly, almost painfully, to the senses. And the sun purples the clouds in the west, and the sultry evening steals on as if there had been no battle, and the furious shout and the cannon's roar had never shook the earth. And how look those fields—we may see them before dark—the ripening grain, the luxuriant corn, the orchards, the grassy meadows, and in their midst the rural cottage of brick or wood? They were beautiful this morning. They are desolate now—trampled by the countless feet of the combatants, plowed and scarred by the shot and shell, the orchards splintered, the fences prostrate, the harvests trodden in the mud. And more dreadful than the sight of all this, thickly strewn over all their length and breadth, are the habiliments of the soldier—the knapsacks, cast aside in the stress of the fight, or after the fatal lead has struck; haversacks, yawning with the rations the owner will never call for; canteens of cedar of the men of Jackson, and of cloth-covered tin, of the men of the Union; blankets and trousers, overcoats and caps, and some are blue and some are gray; muskets and ramrods, and bayonets and swords, and scabbards and belts, some bent and cut by shot and shell; broken wheels, exploded caissons, and limber boxes, and dismantled guns; and all these were sprinkled with blood; horses, some dead, a mangled heap of carnage, some alive with a leg shot clean off, or other frightful wound, appealing to you with almost more than brute gaze as you pass; and last, but not least numerous, many thou-

sands of men. And there was no rebellion here now,—the men of South Carolina were quiet by the side of those of Massachusetts, some composed with upturned faces, sleeping the last sleep, some mutilated and frightful, some wretched, fallen, bathed in blood, survivors still, and unwilling witnesses of the rage of Gettysburg.

And yet with all this before them, as darkness came on, and the dispositions were made and the outposts thrown out for the night, the Army of the Potomac was quite mad with joy. No more light-hearted guests ever graced a banquet than were these men as they boiled their coffee and munched their soldier's supper tonight. Is it strange? Otherwise they would not have been soldiers. And such sights as all these will continue to be seen as long as war lasts in the world; and when war is done, then is the end, and the days of the millennium at hand.

The ambulances commenced their work as soon as the battle opened. The twinkling lanterns through the night, and the sun of tomorrow, saw them still with the same work unfinished.

I wish that I could write, that with the coming on of darkness ended the fight of today, but such was not the case. The armies have fought enough today, and ought to sleep tonight, one would think; but not so thought the enemy. Let us see what he gained by his opinion. When the troops, including those of the Twelfth Corps, had been withdrawn from the extreme right of our line, in the afternoon, to support the left, as I have mentioned thereby of course weakening that part of the line so left, Ewell, either becoming aware of the fact or because he thought he could carry our right at all events, late in the afternoon commenced an assault upon that part of our line. His battle had been going on there simultaneously with the fight on the left. He had advanced his men through the woods, and in front of the formidable position lately held by the Twelfth Corps, cautiously, and to his surprise, I have no doubt, found our strong defenses upon the extreme right entirely abandoned These he at once took possession of, and simultaneously made an attack upon our right flank, which was now near the summit of Culp's Hill, and upon the front of that part of the line. That small portion of the Twelfth Corps which had been left there, and some of the Eleventh Corps, sent to their assistance, did what they could to check the enemy; but could make but feeble resistance to their

overwhelming forces. Matters began to have a bad look in that part of the field; a portion of the First Division of the First Corps was sent them for support, the Sixth Wisconsin among them, and this improved matters. But still, as we had but a small number of men there, all told, the enemy, with their great numbers, were having there too much prospect of success; and it seems that probably, emboldened by this, Ewell had resolved upon a night attack, upon that wing of the army, and was making his disposition accordingly. The enemy had not at sundown actually carried any part of our rifle pits there, save the ones abandoned; but he was getting troops assembled upon our flank, and all together, with our weakness there at that time, matters did not look as we would like to have them. Such was then the position of affairs when the fight upon our left, that I have mentioned, was done. Under such circumstances it is not strange that the Twelfth Corps, as soon as its work was done upon the left, was quickly ordered back to the right, to its old position. There it arrived in good time; not soon enough, of course, to avoid the mortification of finding the enemy in the possession of a part of the works the men had labored so hard to construct, but in ample time before dark, to put the men well in the pits we already held, and to take up a strong defensible position, at right angles to and in rear of the main line, in order to resist these flanking dispositions of the enemy. The army was secure again. The men in the works would be steady against all attacks in front, as long as they knew that their flank was safe. Until between ten and eleven o'clock at night, the woods upon the right resounded with the discharge of musketry. Shortly after, or about dark, the enemy made a dash upon the right of the Eleventh Corps. They crept up the windings of a valley, not in a very heavy force, but, from the peculiar manner in which this corps does outpost duty, quite unperceived in the dark until they were close upon the main line. It is said—I do not know it to be true—that they spiked two guns of one of the Eleventh Corps' batteries, and that the battery men had to drive them off with their sabres and rammers, and that there was some fearful Dutch swearing on the occasion—*"donner wetter,"* among other similar impious oaths, having been freely used. The enemy here were finally repulsed by the assistance of Colonel Carroll's brigade of the Third Division

of the Second Corps, and the One Hundred and Sixth Pennsylvania, from the Second Division of the same corps, was, by General Howard's request, sent there to do outpost duty. It seems to have been a matter of utter madness and folly upon the part of the enemy to have continued their night attack as they did, upon the right. Our men were securely covered by ample works, and even in most places a log was placed a few inches above the top of the main breastwork, as a protection to the heads of the men as they thrust out the pieces beneath it to fire. Yet in the darkness the enemy would rush up, clambering over rocks and among trees, even to the front of the works, but only to leave their riddled bodies there upon the ground, or to be swiftly repulsed headlong into the woods again. In the darkness the enemy would climb trees close to the works, and endeavor to shoot our men by the light of the flashes. When discovered a thousand bullets would whistle after them in the dark, and some would hit, and then they would make up their minds to come down.

Our loss was light, almost nothing, in this fight. The next morning the enemy's dead were thick all along this part of the line. Near eleven o'clock the enemy, wearied with his disastrous work, desisted; and thereafter until morning not a shot was heard in all the armies.

So much for the battle. There is another thing I wish to mention of the matters of the 2d of July. After evening came on, and from reports received, all was known to be going satisfactorily upon the right. General Meade summoned his corps commanders to his headquarters for consultation. A consultation is held upon matters of vast moment to the country, and that poor little farmhouse is honored with more distinguished guests than it ever had before, or than it will ever have again, probably. Do you expect to see a degree of ceremony and severe military aspect characterize this meeting, in accordance with strict military rules, and commensurate with the moment of the matters of their deliberation? Name it "Major-General Meade, commander of the Army of the Potomac, with his corps generals, holding a council of war, upon the field of Gettysburg," and it would sound pretty well.—and that was what it was; and you might make a picture of it and hang it up by the

side of "Napoleon and his Marshals," and "Washington and his Generals," may be, at some future time. But for the artist to draw his picture from, I will tell how this council appeared. Meade, Sedgwick, Slocum, Howard, Hancock, Sykes, Newton, Pleasanton (commander of the cavalry), and Gibbon were the generals present. Hancock, now that Sickles is wounded, has charge of the Third Corps, and Gibbon again has the Second. Meade is a tall, spare man, with full beard, which with his hair, originally brown, is quite thickly sprinkled with gray, has a Romanish face, very large nose, and a white large forehead, prominent and wide over the eyes, which are full and large and quick in their movements, and he wears spectacles. His *fibres* are all of the long and sinewy kind His habitual personal appearance is quite careless and it would be rather difficult to make him look well dressed. Sedgwick is quite a heavy man—short, thick-set and muscular, with florid complexion, dark, calm, straight-looking eyes, rather full, heavyish features, which, with his eyes, have plenty of animation when he is aroused. He has a magnificent profile, well cut, with the nose and forehead forming almost a straight line, curly, short chestnut hair and full beard, cut short, with a little gray in it. He dresses carelessly, but can look magnificently when he is well dressed. Like Meade, he looks and is honest and modest. You might see at once why his men, because they love him, call him "Uncle John"—not to his face of course, but among themselves. Slocum is small, rather spare, with black, straight hair and beard, which latter is unshaven and thin; large, full, quick, black eyes, white skin, sharp nose, wide cheek bones and hollow cheeks, and small chin. His movements are quick and angular, and he dresses with a sufficient degree of elegance. Howard is medium in size, has nothing marked about him, is the youngest of them all, I think; has lost an arm in the war, has straight brown hair and beard, shaves his short upper lip, over which his nose slants down, dim blue eyes, and on the whole appears a very pleasant, affable, well-dressed gentleman. Hancock is the tallest and most shapely, and in many respects is the best looking officer of them all. His hair is very light brown, straight and moist, and always looks well; his beard is of the same color,

of which he wears the moustache and a tuft upon the chin; complexion ruddy, features neither large nor small, but well cut, with full jaw and chin, compressed mouth, straight nose, full, deep blue eyes, and a very mobile, emotional countenance. He always dresses remarkably well, and his manner is dignified, gentlemanly, and commanding. I think if he were in citizen's clothes and should give commands in the army to those who did not know him, he would be likely to be obeyed at once, and without any question as to his right to command. Sykes is a small, rather thin man, well dressed and gentlemanly, brown hair and beard which he wears full, with a red, pinched, rough-looking skin, feeble blue eyes, large nose, with the general air of one who is weary and a little ill-natured. Newton is a well-sized, shapely, muscular, well-dressed man, with brown hair, with a very ruddy, clean-shaved, full face, blue eyes, blunt, round features, walks very erect, curbs in his chin, and has somewhat of that smart sort of swagger that people are apt to suppose characterizes soldiers. Pleasanton is quite a nice looking dandy, with brown hair and beard; a straw hat with a little jockey rim, which he cocks upon one side of his head, with an unsteady eye that looks slyly at you and then dodges. Gibbon, the youngest of them all, save Howard, is about the same size as Slocum, Howard, Sykes and Pleasanton, and there are none of these who will weigh one hundred and fifty pounds. He is compactly made, neither spare nor corpulent, with ruddy complexion, chestnut brown hair, with a clean-shaved face, except his moustache, which is decidedly reddish in color; medium-sized, well-shaped head, sharp, moderately jutting brows, deep blue, calm eyes, sharp, slightly aquiline nose, compressed mouth, full jaws and chin, with an air of calm firmness in his manner. He always looks well dressed. I suppose Howard about thirty-five, and Meade about forty-five years of age; the rest are between these ages, but not many are under forty. As they come to the council now there is the appearance of fatigue about them, which is not customary, but is only due to the hard labors of the past few days. They all wear clothes of dark blue, some have top boots and some not, and except the two-starred strap upon the shoulders of all save Gibbon, who has but one star, there was scarcely a piece of regulation uniform about them all.

They wore their swords, of various patterns, but no sashes; the army hat, but with the crown pinched into all sorts of shapes, and the rim slouched down and shorn of all its ornaments but the gilt band—except Sykes, who wore a blue cap, and Pleasanton with his straw hat, with broad black band. Then the mean little room where they met; its only furniture consisted of a large, wide bed in one corner, a small pine table in the centre, upon which was a wooden pail of water, with a tin cup for drinking, and a candle stuck to the table by putting the end in tallow melted down from the wick, and five or six straight-backed, rush-bottomed chairs. The generals came in; some sat some kept walking or standing, two lounged upon the bed, some were constantly smoking cigars. And thus disposed, they deliberated, whether the army should fall back from its present position to one in rear which it was said was stronger; should attack the enemy on the morrow, wherever he could be found; or should stand there upon the horseshoe crest, still on the defensive, and await the further movements of the enemy. The latter proposition was unanimously agreed to. Their heads were sound. The Army of the Potomac would just halt right there, and allow the enemy to come up and smash his head against it, to any reasonable extent he desired—as he had today. After some two hours this council dissolved, and the officers went their several ways.

Night, sultry and starless, droned on; and it was almost midnight that I found myself peering my way from the line of the Second Corps, back down to the general headquarters, which were an ambulance in the rear, in a little peach orchard. All was silent now but the sound of the ambulances as they were bringing off the wounded; and you could hear them rattle here and there about the field, and see their lanterns. I am weary and sleepy, almost to such an extent as not to be able to sit on my horse And my horse can hardly move—the spur will not start him. What can be the reason? I know that he has been touched by two of their bullets today, but not to wound or lame him to speak of. Then, in riding by a horse that is hitched, I get kicked. Had I not a very thick boot, the blow would have been likely to have broken my ankle; it did break my temper as

it was, and, as if it would cure matters, I foolishly spurred my horse again. No use—he would only walk. I dismounted; I could not lead him along at all, so, out of temper, I rode at the slowest possible walk to the headquarters, which I reached at last. Generals Hancock and Gibbon were asleep in the ambulance. With a light I found what was the matter with "Billy." A bullet had entered his chest just in front of my left leg as I was mounted, and the blood was running down all his side and leg, and the air from his lungs came out of the bullet-hole. I begged his pardon mentally for my cruelty in spurring him, and should have done so in words if he could have understood me. Kind treatment as is due to the wounded he could understand, and he had it. Poor Billy! He and I were first under fire together, and I rode him at the Second Bull Run, and the First and Second Fredericksburg, and at Antietam after brave "Joe" was killed; but I shall never mount him again. Billy's battles are over.

"George, make my bed here upon the ground, by the side of this ambulance. Pull off my sabre and my boots—that will do!" Was ever princely couch, or softest down, so soft as those rough blankets, there upon the unroofed sod? At midnight they received me for four hours' delicious, dreamless oblivion of weariness and of battle. So, to me, ended the 2d of July.

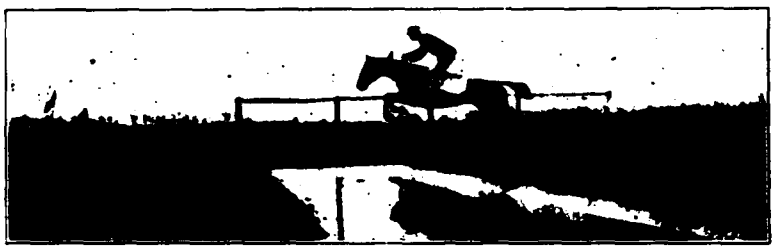
[*To be Continued.*]

THE INTERNATIONAL CONCOURS HIPPIQUE.

By Captain W. C. SHORT, Thirteenth Cavalry.

(Held at Rome, Italy, April 29 to May 5, 1908.)

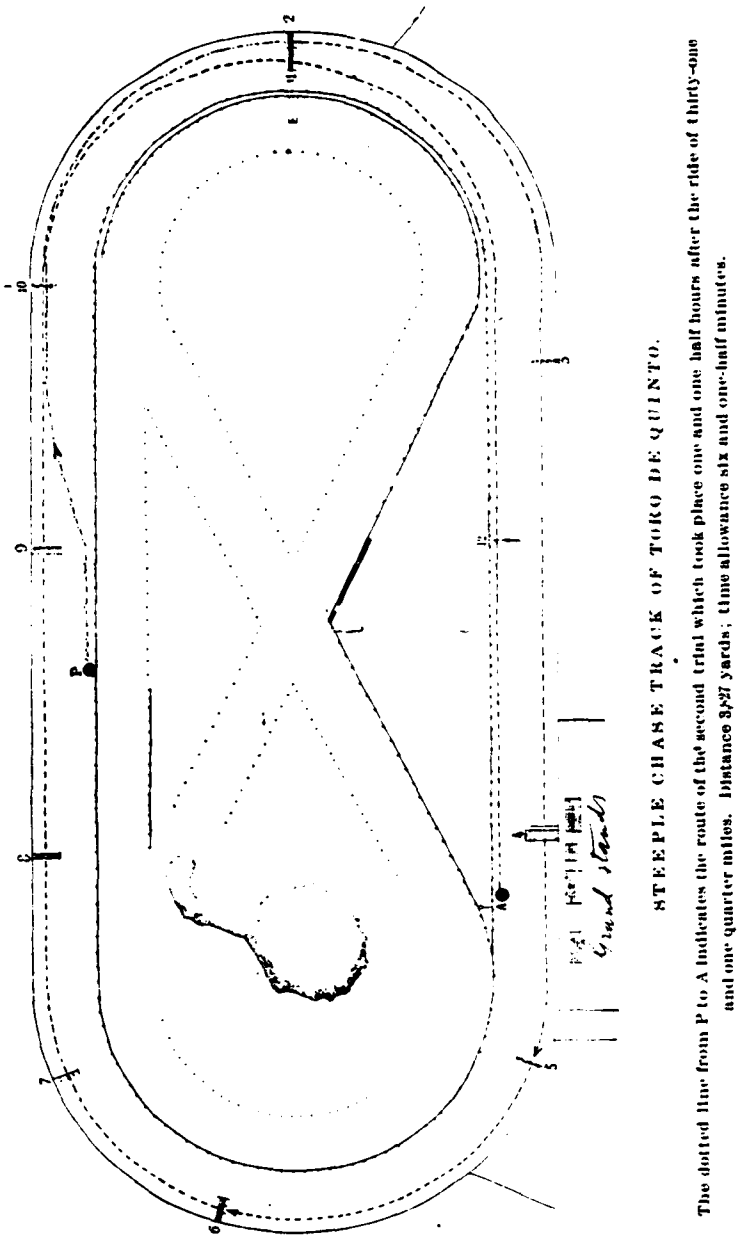
The Concours was held at the Toro de Quinto, the Post Graduate School of Equitation of the Italian Army, which is located just outside of Rome. All of the contests of this Concours were confined to officers' chargers and were open to the officers of all nations. It was originated and conducted under the orders and supervision of the King of Italy and his War Department and was carried on with great formality and splendor. The expenses of all contestants, both foreign and Italian, were paid by the Italian government.



THE WATER JUMP.

The ditch is about fifteen feet wide.

The grand hippodrome belonging to the Cavalry School is equipped with all the requirements for such an exhibition, such as obstacles, turf track, grand stands, including a royal pavilion, etc. No more ideal place could be found for the purpose, and even this great amphitheater was not large enough to accommodate the immense crowds that came each day to witness these rides. No greater proof is needed of the interest taken by the Italians, from the highest to the lowest, in equitation.

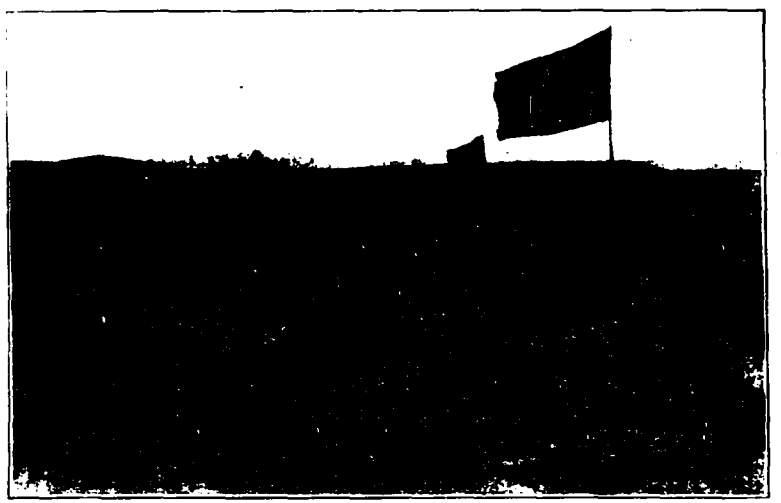


STEEPLE CHASE TRACK OF TORO DE QUINTO.

The dotted line from P to A indicates the route of the second trial which took place one and one half hours after the ride of thirty-one and one quarter miles. Distance 3,827 yards; time allowance six and one-half minutes.

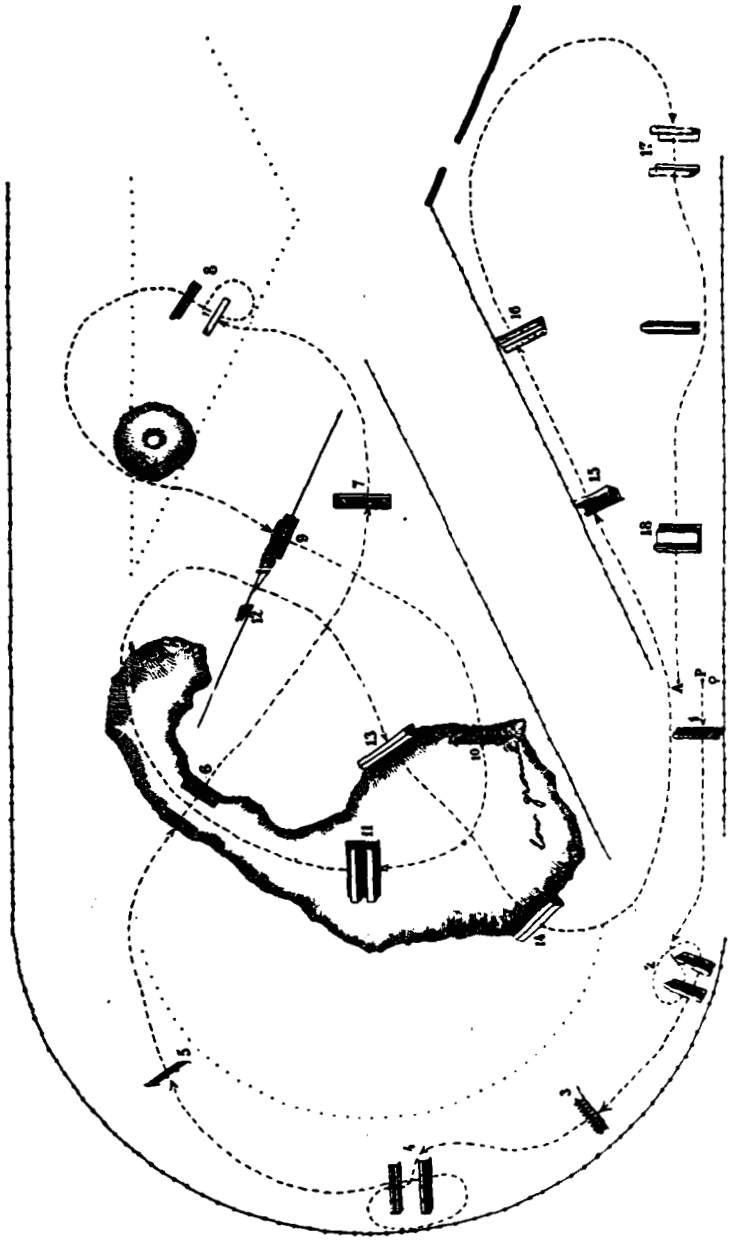
It is not necessary to go into the details of the steeplechases, high jumping, long jumping, etc., as these are the same the world over, but I will try to give an idea of the severe tests demanded for the "Championship of Officers' Chargers." The contest had for its object the finding the horse with the greatest endurance, bravery, calmness and training.

There were 103 contestants as follows: Ninety-two Italians, seven Belgians, one Russian, one Spaniard, one Roumanian and one from the Argentine Republic. The few contestants from the foreign nations is due to the fact that the Italians made the conditions so difficult on account of the special obstacles used and which required a certain amount of prior special training and also because of the short time between the issuance of the programs and conditions and the date of the Concours that there was not sufficient time to get the horses in readiness. It is to be remembered that the training season in Italy is during the winter while further north it is in the spring. However, all the European nations sent military commissions as observers.



OBSTACLE No. 11.

On account of the great number of contestants, they were divided into two groups. The first test for the first group commenced promptly at seven o'clock, a. m., April 29th, and at in-

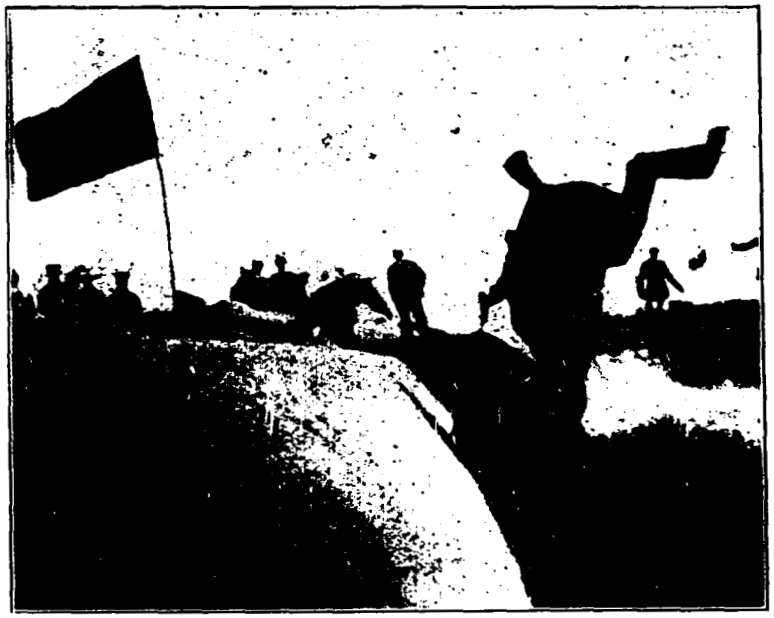


TRACK FOR THE THIRD AND FINAL TRIAL.

The dotted line from P to A indicates the course which was 2,784 yards. The time allowance was six minutes and fifteen seconds. The obstacles at 2, 4, 6, 8 and 17 were crossings of roads enclosed by different kinds of fences.

tervals of seven minutes each contestant was started out by himself on a ride of thirty-one and one-fourth miles, to follow a route marked on a map and at certain points, indicated on the map, he was required to leave the road and follow a flagged course of six and one-fourth miles with natural obstacles, such as fences, stone walls, creeks, steep descents, etc., etc. They rode with packed saddles and each officer carried his arms.

Four hours were allowed in which to make this ride.



A FALL AT OBSTACLE NO. 11.

This officer, like all others who met with similar accidents, mounted his horse after the fall and made him take the obstacle.

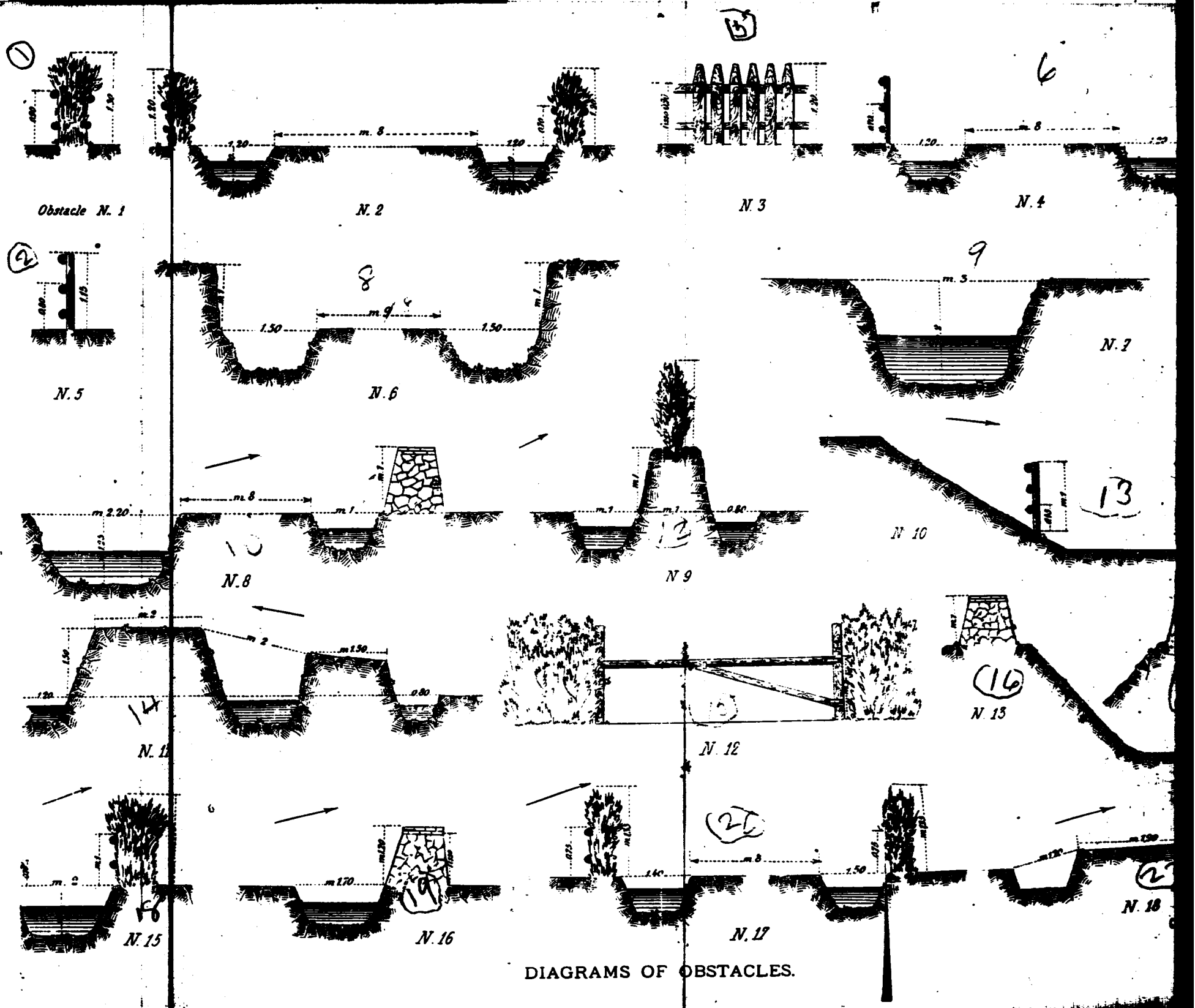
Judges were stationed at all obstacles in the country and the judges at the finish were required to forbid any horse from taking any further part in the contests if he was not in good condition at the completion of this test, even if he had covered the distance within the required time.

All horses which had successfully completed this trial of the morning were required, after five hours and thirty minutes from

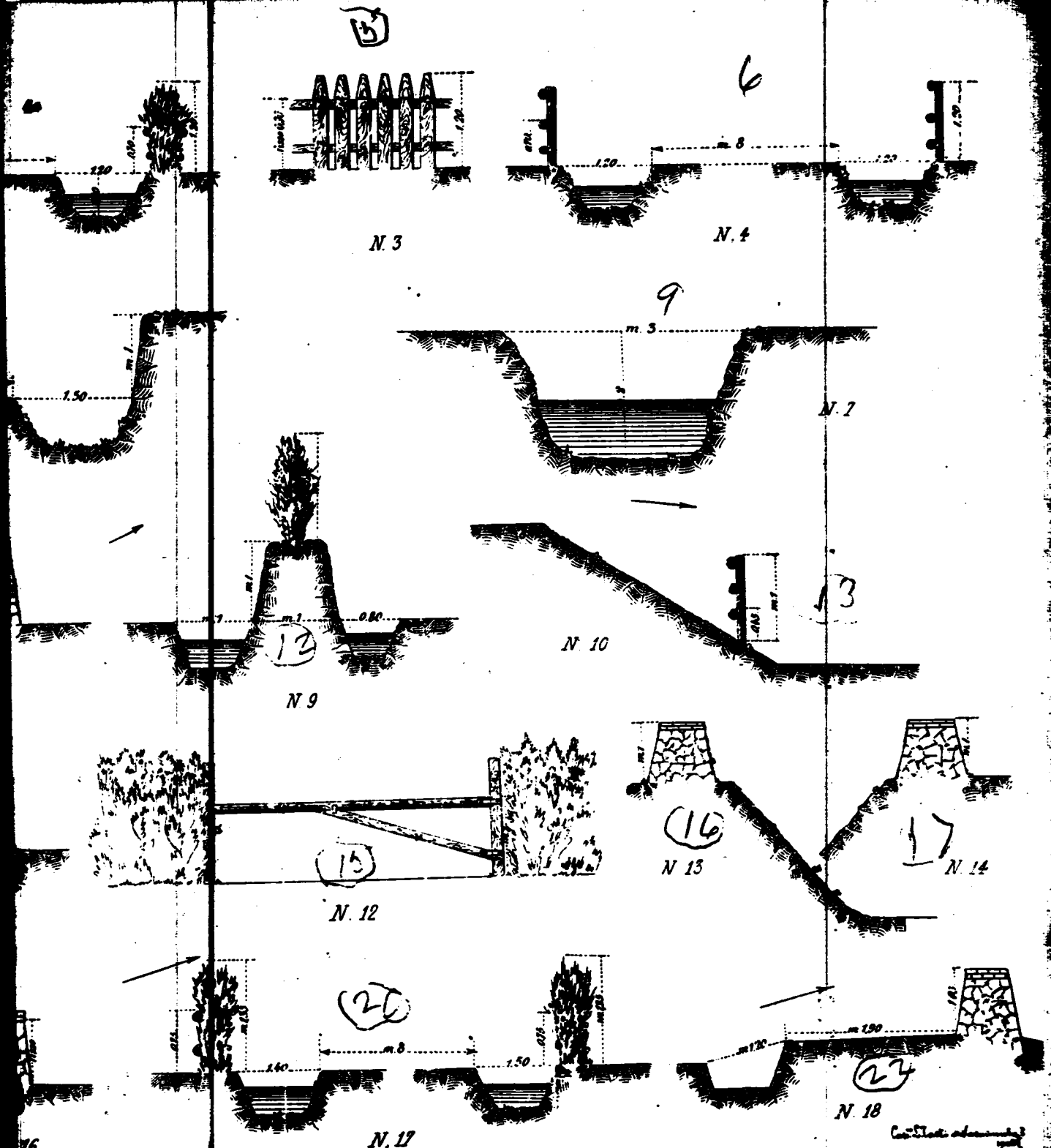
their first departure (not from their return, thus allowing one hour and thirty minutes rest), to gallop over a course of nearly four thousand yards and take twelve obstacles on the hippodrome turf track. Six minutes and thirty seconds were allowed for this trial. The equipment for this trial was the English saddle and undress uniform without arms. A refuse at an obstacle was penalized by the loss of two points and a fall by five points.

OBSTACLE No. 16.
Stone Wall and Ditch.

On the following afternoon, the third trial of these same horses took place, only those who had successfully completed the two preceding tests being allowed to take part. In this third trial, they were required to gallop over a distance of about twenty-seven hundred yards with eighteen very difficult obstacles and with many tortuous turns. Six minutes and fifteen seconds were allowed for covering this course. To strike the obstacles or to put two feet in a ditch was penalized by the loss of two points.

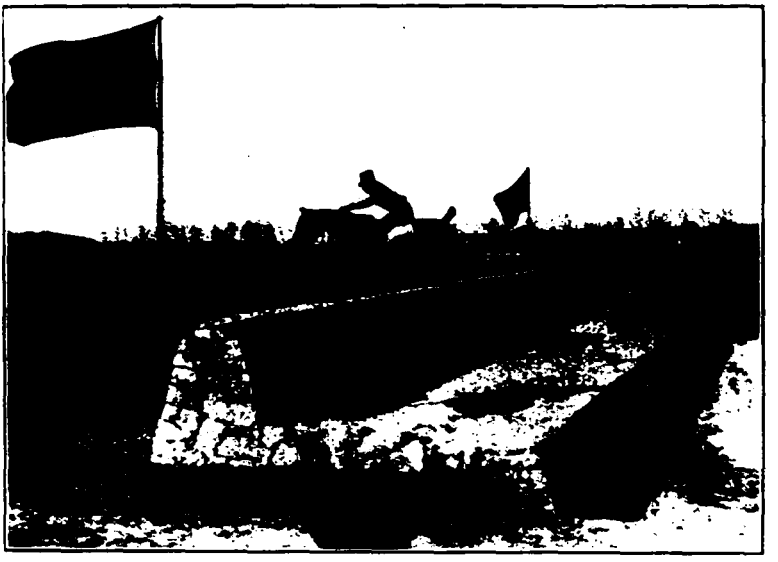


DIAGRAMS OF OBSTACLES.



DIAGRAMS OF OBSTACLES.

OBSTACLE No. 15.



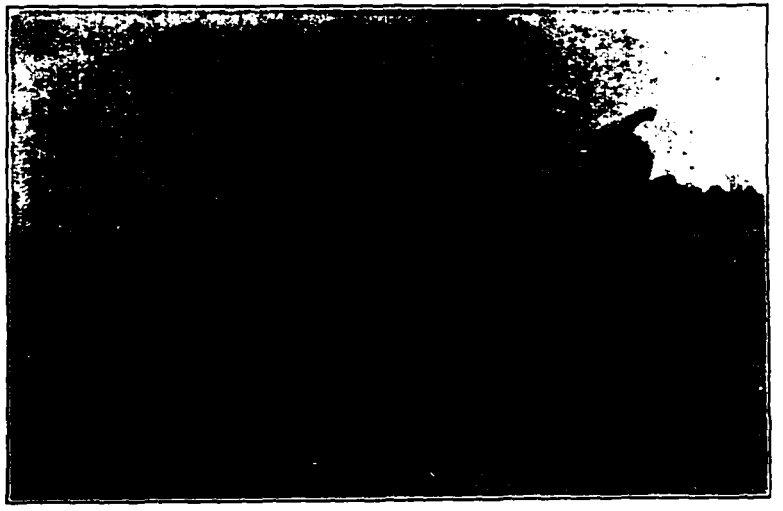
OBSTACLE No. 18.

The penalty for a refuse or a fall was the same as in the preceding trial.

These three trials constituted the requirements for the "Championship." The second group commenced the same program on the morning of the third day.

The number of officers who completed these three trials within the required time and who completed all the tests with more or less success were forty-nine, which was remarkable.

After the classification had been made, it was found that



THE SPANISH OFFICER WHO CAME OUT SECOND.

In the program this horse is noted as Irish but he is Anglo-Norman and was trained at Saumur by a French officer.

one Italian and the Spanish officer were the only ones who had made perfect performances and consequently it was necessary to put them through an additional trial. This additional test consisted in putting narrow obstacles in a zigzag course between two marked lines and the horses were required to remain within the lines although a very fast gait was required. The Italian's horse went over this course without a fault but that of the Spaniard rapped his hind foot on the stone wall and so lost the first place.

The prizes for this Concours were four thousand dollars

THE LONG JUMP.

The jump is wider than the cut indicates. I was unable to measure it but it was the longest I ever saw a horse make. W. C. S.

STONE WALL AND DITCH.

given by the King of Italy and objects of art of value presented by different sovereigns, including those of Germany, Austria and France. The four thousand dollars were divided proportionately between the first sixteen winners.

I watched the horses on the road near the finish of the thirty-one and a quarter miles ride and found that a majority of them came through in splendid condition, showing that the conditioning of horses is well understood even by the Second Lieutenants. Some of the horses even came in without having turned a hair and some had been carefully brushed up by their riders in

some secluded spot beside the road before arriving at the finish. It must also be remembered that some of the riders were very large men. Many of them came in before the four hours were up, thus gaining more time to feed and freshen their horses before the second test of the afternoon.

The horses were nearly all Irish and very excellent animals, costing from six hundred dollars up to in the thousands. There were a few thoroughbreds and one Anglo Arab.

There was comparatively little falling, considering the number of contestants and the severity of the tests but this is explained by the fact that all were mounted on superb, highly trained horses and that all were men of splendid courage.

The third trial of taking the eighteen difficult obstacles was very exciting and the most prejudiced person could not withhold his enthusiastic admiration for the courage of the riders and horses. Those who had the bad luck to fall were back in their saddles immediately, if they were conscious, and pushing on with greater speed to make up for lost time. It must have been a great satisfaction to the King of Italy, who watched every event with great interest, to see what gritty, courageous officers he had in case he had need for them. The common people who were looking on were among the first to recognize the courage of these officers and to applaud them with great enthusiasm.

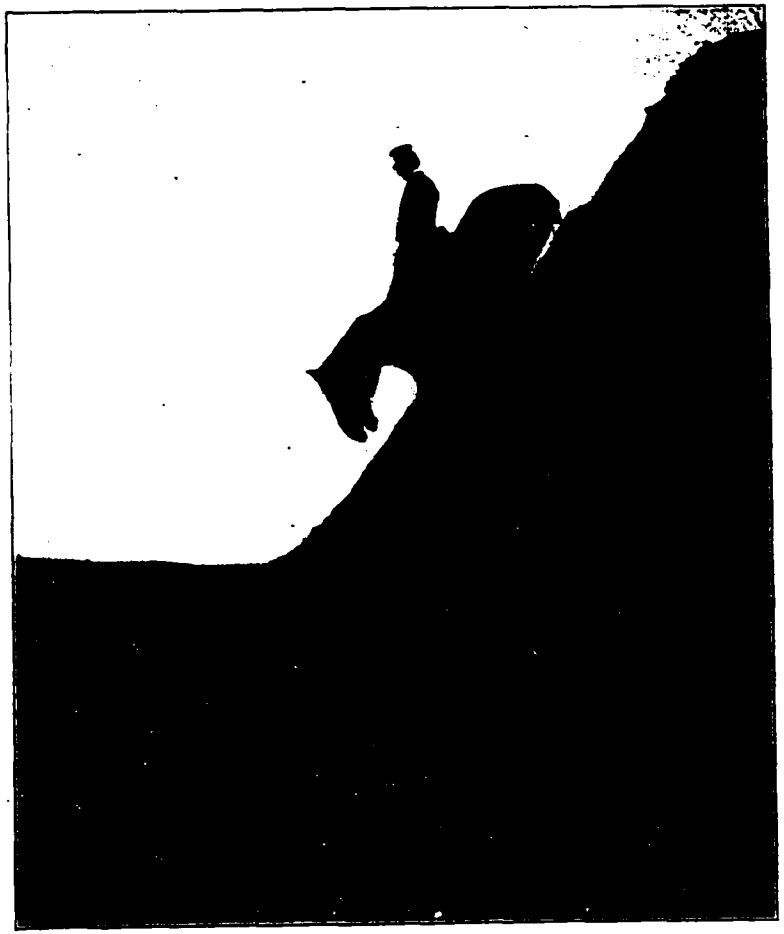
There are people who may ask, what is the use of all this. It is simply because the officer learns to care for his horse, to know how much he can demand from him and to have the courage to demand it. This horsemanship is dangerous work but the officer gets accustomed to the danger and soon learns to like it so that the time when he needs courage, in time of battle, he has it and is prepared to set the example to his men. Another very important feature which figures in the life of an officer who rides horses is that he soon learns that he must be and remain in the same condition as his horse. He finds that late hours and dissipation do not fit him for such work, do not go well with a vigorous horse and he finds he must give up one or the other.

It is believed that all would prefer to see our officers spending their time on horseback than to see them sitting around the club. The officers of the mounted services of foreign armies are, almost without exception, magnificent horsemen and are very moderate in their habits. When you see an officer abroad who is an excellent horseman, nine times out of ten it will be found that he is a cold water man.

The experience that the officer gets in making horsemanship his pastime as well as his work, shows on the training and condition of foreign troops of cavalry.

In this Concours, the French officers were refused permission by their government to enter the contest for the "Championship of the Charger," but were allowed to enter the inter-

national, "free for all" steeplechase and took away with them all the money.



DESCENT OF A VERY STEEP BANK.

The illustration is true to life and such descents are frequently practiced at the school. It is really less difficult to perform than it appears. They first commence practicing their horses on reasonable hills, but finally make them take this descent. The ground is well adapted for this work as the horses get a good foot hold. The practice is injurious to the horses.

MACHINE GUNS WITH CAVALRY.

BY MAJOR J. E. REYNOLDS LANDIS, MAJOR, SIXTH CAVALRY.

In the Italian cavalry maneuvers near Udine in September, 1908, (at first, one brigade of cavalry, later, one division of cavalry operating against another) experiments were made in the employment of machine guns. These guns were Maxim machine guns, without shields, packed on horses. Two of them constituted a platoon, which also included 1 officer, 23 men and 34 horses. The ammunition, except the first supply for the firing line, was transported on carts.

The experiments were confined to the use of machine gun platoons attached to brigades, instead of to regiments, but did not include uniting platoons in a group under command of an officer of higher rank than a lieutenant.

On the march, the guns having been experimentally placed in different parts of the column, it was found advisable, when the advance guard was not very strong, to place these guns at the head of the main body. If in rear of that body, they could not be brought into action, even at most rapid gaits, until the opposing main bodies had come into contact. If placed with a small advance guard they were considered too exposed to loss. At night it was considered best to keep them in the midst of the main body.

In action, special conditions were considered as warranting the use of the guns separately though the application of the principle that the guns should be kept together was found to give the best results.

When the platoon had taken up an advanced position, it was found advisable to have a portion of the escort dismount so as to be in readiness to make use of fire action.

No definite deductions seem to have been made as to the method by which the escort could best fulfill its mission with the

guns or as to its position with respect to the guns, but difficulty was sometimes had with led horses that were unaccustomed to machine gun fire.

The following ideas, advanced by Captain Viktorin, set forth an organization for these guns, and a method of employment of them and their escort that may well engage our serious attention, illustrated as they are by such practical examples.

* * *

Extracts from "Examples of the Employment of Machine Guns With Cavalry" by Captain Roberto Segre, General Staff, Italian Army in the Rivista di Cavalleria, May 1909, translated by Major J. F. R. Landis, Sixth Cavalry.

The group of machine guns with Austrian cavalry is made up of two platoons, each including two Schwarzlose machine guns which are a little lighter than the ordinary Maxim.

Each gun is served by three men, including the gunner, has two men to bring up ammunition, and is transported by four horses (one carrying the gun and 500 cartridges, and three carrying 1,500 cartridges each). Taking into consideration the four men leading the horses, there are with each machine gun 9 men and 13 horses.

Each platoon is under the orders of a lieutenant who has with him one range taker, two orderlies, a sergeant-major, and an armorer; the platoon includes also a caisson drawn by six horses, and two spare horses (one of the latter being ridden).

The group is commanded by a company officer (usually a captain), accompanied by a trumpeter, and the two caissons are in charge of a non-commissioned officer. The total for the group is therefore 3 officers, 59 men, 83 horses, and 2 caissons.

The group is directly under the orders of the commander of the cavalry unit to which it is attached; that is, usually, a Division Commander; sometimes a Brigade Commander; exceptionally a Regimental Commander. This system corresponds to the tendency to keep machine guns at the disposition of officers commanding larger units; a tendency which is evident in the very regulations for the drill of groups of machine guns with cavalry.

One group of machine guns (the third) covered about 815 kilometers in five weeks, during four of which it was on the march or in maneuvers.

The saddles had been gone over, one by one, before starting, modifying wherever necessary the stuffing of the pack-saddles so as to leave the withers and backbones of the horses entirely free.

On the march, in addition to the usual halts, after from 15 to 20 kilometers the group halted for three-quarters of an hour during which all the horses were unsaddled in order to allow their backs to cool off; then, having been watered, they were resaddled with the greatest care.

Even in maneuvers endeavor was made to do likewise; and so, in spite of pretty warm weather, of covering more than 800 kilometers, of going into action 64 times, and maneuvering at rapid gaits even over very rough ground, often jumping obstacles, the commander found that the group had not a single horse with a saddle gall.

In marches in the vicinity of the enemy, the group was always kept well to the front. Captain Viktorin, commander of the group, in his report states, "at first the group was employed rather circumspectly and not pushed too far to the front; but very soon all were convinced of its qualities of mobility and of rapidity in coming into action; so that it was always placed with the main body of the advance guard or was assigned to detachments that were to operate against the flanks of the adversary or were to be employed in making demonstrations." Then he adds that machine guns in a cavalry column can never be put too far forward, because if, in case of an encounter with hostile cavalry, they should have to be brought up from the rear, though they should employ very fast gaits, they would never make up the precious time that would have been lost. On the other hand, the danger of losing them is not real; so small and mobile a nucleus as is the firing group can always easily find for itself a way out of any critical situation. Sometimes, in fact, the employment of the group was more than audacious, it was rash; and proof of this is the frequency with which the group was used in the charge.

The horse that carries the gun carries also 500 cartridges; therefore the firing group may be made up of four of these horses, with the corresponding four leaders, and of 16 men. Considering also the 3 officers and the other men attached (non-commissioned officers, trumpeters, and orderlies) we obtain thus a nucleus of 33 men (28 sabers, taking into account the horse leaders) which differs from an ordinary cavalry platoon only by the four led horses.

Captain Viktorin states that in difficult situations he always used to advance with the firing group only, formed as above explained, leaving the horses carrying ammunition with the caissons of the horse artillery. The 500 cartridges per gun seemed to him sufficient for a first supply; and he remarks that a detachment so small may readily take advantage of the terrain and therefore much more easily reach firing positions, all unknown to the enemy. At most Captain Viktorin admits that there should be included, under such circumstances, in the firing group one horse carrying ammunition; with this, the first supply of the group becomes 3,500 cartridges.

In addition, this composition of the group has the advantage that it is not necessary to worry about what may happen in critical situations. Especially in combats between bodies of cavalry, with their rapidly changing phases, circumstances may arise in which the group, when moving, has not time enough to unpack in order to repulse with fire a charge of the enemy, even though for this a very short time is necessary, 25 seconds according to Captain Viktorin. At such a time those 30 odd horses, with only four led horses, can draw saber and charge in close order, the guns behind the line; and if the charge is carried out with decision there is great probability not only of avoiding the complete destruction of the group, but even of getting it out of a critical situation with very slight losses.

In fact the group did charge several times. In the maneuver of the 11th of September there were two charges. In the beginning of the action the commander of the group, who had only three machine guns with him because the fourth had been pushed forward with a reconnoitering detachment, having caught sight of an opposing infantry detachment, at once put a platoon into action and started to place the third gun on top of a hill when he

saw a small detachment of the enemy's cavalry preparing to charge the two guns already in action. Then, without hesitating he left behind the pack horse and its leader, and with the persons about him and the men of the third machine gun, he unexpectedly attacked and succeeded in repulsing the platoon of the enemy.

Later, while the two bodies of cavalry were getting ready to charge each other, the group was falling back from a position that was too exposed when the commander noticed that the enemy was trying to attack his squadrons in flank. He decided then at once to oppose this attempt by charge, arranging his group, 30 sabers, in three lines (the first formed of officers, trumpeters, and orderlies, the second of the gunners, and the third of the pack animals and the men leading them). But the little squad was ruled out of action because other squadrons of the enemy came up.

Another example of the charge took place at dawn on the 17th of September when the group, with its escort, was pushing ahead of the Division to take position to the south of the bridges at Tacz. While the group, having caught sight of some squadrons of the enemy advancing in the direction of the vineyard where its commander intended to post it, was increasing the gallop to reach the good position, a platoon of the enemy was sent against it. The commander of the group, considering that if he should not charge with the group, he would be constrained to fall back at the gallop and certainly would not be able to get his guns in action before the encounter of the main bodies because the wooded character of the other portions of the terrain rendered it difficult to find a position for machine guns, decided at once to charge the opposing platoon. This latter was, in fact, repulsed by the prompt arrival of the escort and the group succeeded in then taking up position and in operating very effectively against the main body of the opposing cavalry.

It is, however, proper to add that the Austrians themselves made objection to this method of operating.

The group was often employed as an arm by itself. In all armies it is generally held advisable to employ machine guns in couples because a single gun may sometimes not be able to keep up a prolonged fire, either through derangement or through the

rapid heating of the barrel. In fact, with cavalry units, this having to keep up a prolonged fire will not be a usual thing, especially in fights between cavalry; and derangements do not happen so often in modern, improved machine guns.

Therefore this frequent employment as an arm by itself seems to correspond perfectly to the characteristics of a machine gun unit with cavalry.

Captain Viktorin insists several times on the absolute necessity of the horses of the commander of the group, as well as those of the other officers, of the men themselves, and of the pack horses, especially those carrying guns, being the best obtainable.

He remarks that in an encounter between two bodies of cavalry the time that can be used in firing before the machine guns are masked by their own squadrons, or at any rate before the meeting takes place, is so limited that the commander of the group, as soon as the commander of the cavalry has settled upon his own plan of action, must always boldly advance as rapidly as possible to succeed in finding a place where, in time, he can properly bring his machine guns into action; and that the firing group, attentive to his signals, must then come up to him even at full gallop as soon as the position has been chosen.

This time is calculated by seconds, we may say, but we must remember that four machine guns can then easily fire 1,600 shots a minute.

Captain Viktorin remarks that it is well that the escort should not be changed too often. The attention of the personnel of the group is too absorbed in its own fire to be able to pay attention to anything else; the escort must therefore secure it from unpleasant surprises. It would not be doing its work properly if it should remain united alongside of or behind the gun; rather it is probable this would be a cause of injury, because while the group is trying to take advantage of the terrain so as not to be seen by the enemy that group of horsemen would present a large target and would attract the attention of the enemy. Then, acting in this manner, it would frequently not succeed in fulfilling its duty because it would permit surprise by parties of the adversary and in order to oppose them—even if it could succeed in doing so in time—it would then too often mask

the guns, cutting them off from the possibility of making use of their only means of combat, fire action.

The real duty of the escort is to see to it that in the immediate vicinity of the guns—be these in position or on the march—the terrain shall always be scouted.

Captain Viktorin thinks that to attach a group of four machine guns to a large body of cavalry, as is done in Austria, is preferable to attaching a platoon of two guns to each regiment. Especially in actions between cavalry, he remarks, the many machine guns of the regiments would probably only result in deranging the deployment and would hardly succeed in their mission since—in such an encounter—their positions can be only on the flanks of their own troops.

Then, too, it is easier to attach to a regiment a platoon from a group, when that is necessary, than to make a group homogeneous by uniting temporarily two or more platoons; so much the more since it would then always lack a trained commander accustomed to the organization. In addition, we must also consider that the platoons are commanded only by subalterns while the group may be commanded by a captain; by an officer that is, who can best carry on the operations with that initiative which is absolutely necessary.

The first employment of machine guns will take place, for the most part, according to the directions—however brief—of the commander of the cavalry; but when their chief has rapidly and well followed out the instructions of the commander, his mission is very far from being ended. Without awaiting further orders he must promptly fit his own action to the successive rapidly changing aspects of the action between the two bodies of cavalry; must anticipate the intentions of his own commander; must, without hesitation and without delay, act effectively against an adversary who is thinking of withdrawing; must as well, with a rapid glance, note a suitable position which will permit him to stop the pressure of the enemy when the latter has the upper hand.

This opinion is not, however, accepted by all even among the Austrians. Others have expressed the opinion that instead of making of machine guns a fourth arm, a sort of horse artillery

of minor efficacy or a compressed mounted infantry, it would be better employed as an integral part of a regiment, to be detached from the latter only when it is necessary. In conformity with this opinion it has been added, that the system now followed—in that army—leads among other things to a too independent employment such as, in fact, was made of the third group during the maneuvers.

PACK HORSES FOR MACHINE GUNS.

By First Lieutenant FREDERICK J. HERMAN, Ninth Cavalry.

When the machine gun platoons of the United States Army were organized under the provisions of G. O. No. 112 and 113 W. D., 1906, pack *horses* were prescribed for the transportation of the guns and ammunition of the cavalry platoons. A subsequent order prescribes mules as the pack transport of this service.

In my opinion the horse is the better pack animal for machine guns with the mounted service. This conclusion was reached after two and one-half years' experience with a machine gun platoon, which in that time had three distinct sets of pack mules.

The first of these were selected from the pack train at Fort Riley in 1906, ten good mules of uniform size and color, well broken for the usual work of the pack trains of the army, and sound and of good disposition, that took readily to the work, so far as the carrying of the loads was concerned. The next outfit of mules, received in the Philippines, consisted of old wagon mules that could best be spared by the Quartermaster. These took the loads without protest, but became so frequently disabled and stiff and sore from rapid work, that it became necessary to supplant them with a set of new mules—young, unbroken mules, averaging about 4½ years of age. Much care was exercised in the training of these mules from the very beginning, keeping constantly in view the work required and expected of them in the machine gun service. This included the teaching of a uniform gait and speed to conform to the gaits of the cavalry mounts of the men. After a year's hard and careful work these young mules exhibited the same final results obtained with the trained pack mules and the crow-bait from the wagon trains, viz.: they carried their packs willingly, promptly forgot the drill movements

the day after they had been executed the 50th time or oftener, hung back on their drivers, and invariably showed the obstinacy of their mule-disposition at the most critical moment of any and every maneuver proposition when time was its most important element, and conclusively demonstrated their inability to carry the same or a less weight than the cavalry mounts of the drivers and cannoneers over the same distances in the same time, the pack loads usually carried at drills and competitions being less than those carried by the cavalry horses, the ammunition boxes being, as a rule, empty. This difficulty of keeping the pack mules up with the riders was noted and freely commented upon by many officers who witnessed the competitions of the cavalry machine gun platoons at the Department (Luzon) Athletic and Military Meet in Manila in December, 1908. In these events the mules ran with empty ammunition boxes, and were carrying, approximately, 60 pounds less weight than the horses (except in the cases of the gun mules).

On ordinary practice marches the mules keep up with the horses readily enough, and it is quite true that not so much forage is required to subsist the pack mule as must be provided for the horse, but the difference is not great and there the advantage of the mule in this service ends and is more than counterbalanced by the intelligence, tractability and greater mobility and speed of the horse.

In this connection there exists a very reasonable doubt of the ability of any dismounted machine gun command to meet all the demands that will be made upon it in the next war, because of the fact that such commands are limited in speed to the pace and endurance of the foot soldier, who, no matter how well trained in running, must necessarily arrive at any distance in a physical condition incapacitating him for the most efficient service at that particular time.

The horse can be taught to remember the movements and commands of the drill far better than the mule. The young mules of my platoon have been made to execute certain movements, day after day, for months, at all gaits. These movements were those required in the ordinary and habitual maneuvers of the platoon in close order and in going into action, and had special application to the drill programs of coming competitions. In almost every instance, when the periodical tests for time and efficiency were made and these animals were urged to their best efforts, their erratic obstinacy spoiled the test and required it to be gone over again, often repeatedly. At the completion of a special course of training for the Department Meet in Manila in 1908 the men of my platoon and I also, became convinced that the mule as a transport animal for this particular service was unreliable and could be improved upon by the substitution of the horse of suitable conformation.

At one time I turned out one section as an experiment, using the cavalry mounts of the other section as pack animals, and the results were particularly gratifying; the cavalry horses took the loads without trouble, maintained the gaits of the saddle horses as well as their speed, and reduced the best time of a 500-yard service run, including the removal of led animals, by 20 seconds, which was made up in speed and form. It is believed that this time could have been improved upon after more work under the pack saddle. During this experiment the drivers were able to sit up in their saddles and lead their pack horses without special effort, which was a great relief from the arm-racking efforts required with the mules at every gait but the walk, as well as a relief to the saddle horses who were then enabled to carry their riders and equipment with a better balance of weights and without the strain of the back-hanging or resisting mule.

At no time have I seen an intelligent movement originate with any mule in my platoon; often things were done by the mules for which they are usually given credit as intelligence, but to me it simply appeared as a species of low cunning exercised for purely selfish purposes; their every useful move was by the express direction or instigation of their drivers. The whip was absolutely indispensable when the mules were carrying the packs —and at every gait.

The horses, on the contrary, knowing their drill, frequently complied with commands and conformed to movements without touch from whip or rein, or word from driver. And often, when the mules were carrying the packs and a driver was pulled from the saddle by one of these stubborn beasts, his horse would at once retake his place in ranks if free, and keep on with his

section. It was made a rule in the platoon that for neither a loose pack mule, saddle horse, or a man dismounted, was anyone to leave or delay the column—the detached man or animal being required to rejoin as soon as and in the best manner possible. Loose mules always rejoined the column but generally gave trouble in catching them, which was not the case with loose horses.

In a run for position over 500 or 1,000 yards by a machine gun organization, a matter of 15 or 20 seconds or more may be of the utmost importance during an action, and the fate of an engagement may rest upon the fact of the machine guns getting into action at a particular time and place or not; in such event mobility is everything and here the mule would probably fail. The element of chance as represented by the erratic and obstinate mule would necessarily enter into the calculations of the officer directing the maneuver; such element would be eliminated with horses as pack animals.

The gun mule of our machine gun platoons carries about 285 pounds and the ammunition mules approximately 265 pounds, when carrying the war packs with service ammunition; the loads for the ammunition mules for drill and ordinary maneuvers amount to about 155 pounds; the largest and strongest mule is ordinarily selected as the gun mule, but as a rule the large, strong-looking mule seems to go to pieces very soon when fast work is required, and the smaller and tougher pack mule appears to be unable to carry the load without stumbling and an occasional tumble, if the ground is rough and the gait fast. Such is also the case with the average sized pack mule under the ammunition packs with service loads. The saddle horses of the machine gun outfits, with riders equipped for field service in the United States will carry from 240 to 270 pounds according to size of rider. In the colored regiments the latter weight is more often the rule than the exception. In general, however, for garrison drills, the saddle horse of the machine gun service is carrying approximately 50 pounds more than the pack mule with the English model pack-outfit.

The pack loads are equalized and the loads ride lower than those of the saddle horse who is carrying a top heavy load to

which considerable strain is always added when towing mules at a fast gait, which disturbs its equilibrium. With properly selected horses to stand the slight increase in loads when carrying war packs, a uniform gait could be maintained at the maximum speed of the slowest horse for far greater distances than is possible with mules.

The mule has been tried in the Swiss, German and Austro-Hungarian Army as a machine gun pack animal, and the horse selected as more desirable.

In order to obtain accurate data upon the relative merits of the horse and mule for machine gun packs, it is suggested that two machine gun troops (provisional) of six sections each be assembled at some suitable post—Fort Riley or Fort Russell—where a comprehensive program could be worked out covering several months of field service and involving long and short marches, forced marches—by day and night—and including maneuvers in connection with marches and as parts of the minor problems to be solved, during which firing with ball cartridges at appropriate targets, such as would probably be taken advantage of in real service, and over known and unknown ranges, could be had. Such troops should be similarly equipped and perform the same service and solve the same problems, but that one be supplied with suitable pack horses and the other with pack mules. Such experiment might be still more comprehensive in its scope, than the mere determination of the relative merits of the horse and mule as machine gun pack animals and might include the proper test of the several pack outfits now in use; the contemplated organization of machine gun batteries or troops and the system of drill regulations that the War Department may have in view. Such tests, however, if anything is to be learned from them should be conducted by officers with machine gun experience who have shown their interest in and enthusiasm for this service, and not turned over to officers because of a consideration of rank, favor or convenience who have had no experience with or previous interest in machine guns. A board of three officers—a cavalryman, an artilleryman and a veterinarian—should accompany such commands for observation and report.

Several foreign officers with whom I have conversed upon

this subject of machine guns and who witnessed the work of our cavalry and infantry machine gun platoons at the Department and Division Meets in Manila have expressed their surprise that after nearly three years of trial and experiment with these guns no conclusion has been reached as to the best pack animal, pack outfit, system of drill regulations and organization, in the face of what has been accomplished along these lines in Europe and Asia.

That the machine gun will be an important element in the composition of all armies in future wars is generally conceded: then why not determine, without further delay, the best equipment, organization and means of transport, so that, while numerically few and dangerously inadequate in numbers of guns our machine gun organizations may reach the highest possible state of efficiency?

FIELD FIRING FOR COMPANY AND TROOP.

By First Lieutenant S. R. GLEAVES, First Cavalry.

No other phase of cavalry or infantry training receives so much attention from the American officer and enlisted man as rifle practice. Congress wisely encourages what seems to be a national characteristic and with its liberal appropriations has made possible a system of instruction which annually develops some of the most expert known distance riflemen in the world. An annual money allowance of over fourteen dollars per man, for small arms ammunition, is a sum few war budgets can afford; the smallness of our army permits us this advantage, and our people have consequently a right to hope that the battle firing of their infantry and cavalry may be a world standard.

Does our present system stand complete as the most efficient school we can devise in which to instruct and graduate a *battle* shot?

Granted that our graduate can hit a thirty-six inch bulls-eye at eight hundred yards oftener than any American military rifleman ever could before; can he crawl over the top of a hill, estimate the range, and hit a khaki-clad moving figure as promptly as we could wish? If he cannot then our system is defective; we have the money; our men are intelligent and can shoot straight, and only need a chance.

Field firing, under battle conditions and at battle targets has long been recognized in Europe as the final stage necessary to develop the battle shot from the bull's-eye man. Proficiency in practice over varied terrain, at unknown ranges, at neutral colored targets which move and disappear—this should be the goal of military riflemen. We are absorbed in the intermediate steps—essentials though they are—and are losing sight of the ends of rifle efficiency for the soldier; we stop at the elementary and

never make our pupil apply his lessons to the practice of his profession.

Instruction in estimating distance is at present so perfunctory in the average organization that neither officers nor men are as well qualified as they need to be for their duties in campaign. Regulations are now too lenient as to the annual qualification in estimating distance. For his record test, each officer or enlisted man should be allowed but one set of estimates, this, where possible, over terrain never before used for the purpose. Conscientious, painstaking, and practical instruction in this subject is needed, not once a year with black silhouettes on the drill ground placed between certain known limits of distance, but practice throughout the year, at neutral colored figures, trees, and clumps of grass, over varied and difficult terrain. The noncommissioned officers should be trained at the same time to indicate objectives clearly and accurately. In each troop and company there should be two specially trained experts in estimating distance; an average of their estimates would assist the company commander in giving his ranges accurately from the start—and preponderance of accurate fire usually means victory.

Collective fire, as now prescribed for the company and troop, is of so little value that it should no longer have a place in our system. The target used is one we would probably never see under any conditions; ranges are known, and terrain is selected for its lack of difficulties and then smoothed of those that remain; there is little benefit to the company or the company commander, and the percentage of hits, as might be expected, is so high as to give men entirely false ideas; as offering a comparison between volley fire and individual fire it seems now to be hardly worth while.

The ammunition now expended in collective fire should go toward field firing, and by this test organizations should be graded; at the long ranges of modern battle groups of expert riflemen would be of little more battle value as firing units than so many recruits if their leaders were unable to estimate the ranges promptly and accurately. At many posts it will be impossible to conduct field firing on account of danger to surrounding population; at others, particularly in the Philippine Islands,

it is not only feasible but easy; at probably all the maneuver camps there will be little if any difficulty.

For any company commander whose surroundings permit the experiment, and who desires to conduct such practice, as authorized on pages 14 and 15, S. A. Regulations, 1906, no difficulties of any importance present themselves. A disappearing group of eight or more figures can easily be operated by one man in a simple individual pit, the target frame being rectangular, of light construction, and hinged so as to turn from a position face downward upon the earth to a vertical exposed position by means of a crank or rope in the hands of the operator. The moving target is equally as simple and consists only of figures mounted upon a broad base sled drawn by a team; the length of the rope attached is dictated by the cover available for the team and the length of the course over which the target is to move; a snatch-block may well be used to change the direction of pull. Bookbinder cardboard silhouettes are convenient for this work on account of their lightness; the Ordnance Department has sent out a number of these for trial as skirmish groups; or, target cloth may be stretched over the frame, painted the color of the natural background, and the silhouettes cut out of wrapping paper, painted any color desired, and then pasted on the target cloth.

Signals to operators in the pits for exposure of targets, and to the driver of the team for the moving target are best given by an agreed number of pistol shots from the officer in charge, who thus retains entire control of the firing line and targets. The marking detail, consisting of non-commissioned officers and men from another organization, should follow the firing line until the problem is concluded; marking results of fire immediately after its delivery causes a long drag in the exercise and detracts from its realism and interest. When firing on disappearing targets any limit placed on the number of rounds fired in individual firing from any position is open to the same objection; however, for purposes of grading or competition between organizations both measures might be necessary in a particular exercise.

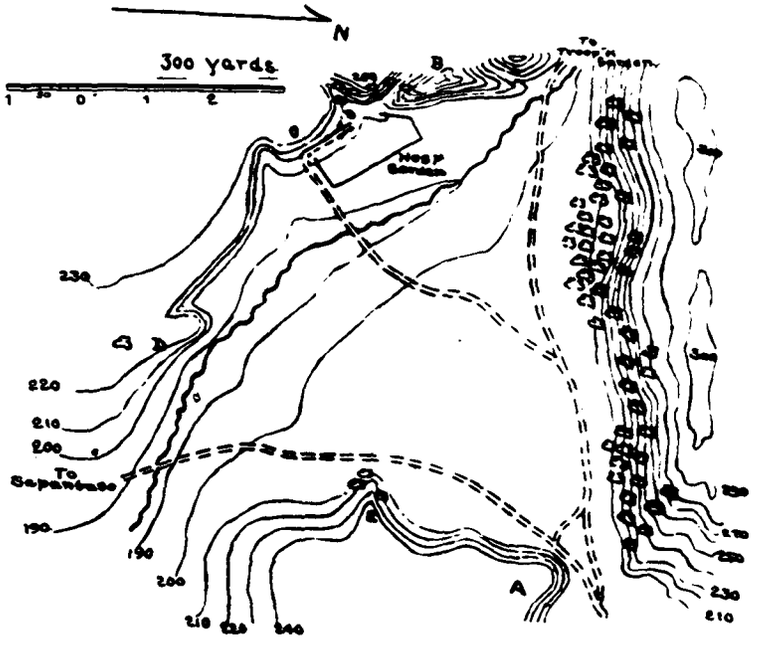
Properly directed problems in field firing cannot fail to be instructive as well as interesting, however simple in character they may be; a line of realistically placed silhouettes encountered

unexpectedly by the advance guard during a practice march, and fired upon from but one position is a case in point; requiring but little expenditure of time and labor. Competitive firing upon such a target between the various organizations composing the column naturally suggests itself—each organization following its predecessor at, say, one hour's marching distance.

The following exercise in field firing was carried out by Troop "C," First Cavalry, near Camp Stotsenburg, P. I., on April 4, 1909; it is described in detail in the hope that some infantry or cavalry reader may be interested in following the various steps, and in knowing the conditions surrounding each.

* * *

Terrain particularly well adapted to the work in hand was found in the vicinity of the Hospital Garden, about one mile west of the post. An open rolling plain, shaped roughly like a right angle triangle, is here enclosed on all sides by high hills; the base



is formed by hill A-E (see sketch) running north and south; a higher wooded ridge running east and west from A forms the leg, and the third side is similarly closed by a line of heights B-C-D. A small stream flows southeast through a defile at the vertex of the triangle, passes a hundred yards east of the Garden, and leaves the plain by a second defile at the south end of hill A-E; the heights B-C-D and hill A-E are free from woods but covered with high cogon, the plain itself is covered sparsely with knee deep grass. Trails leave the enclosed area through defiles at each angle and a lookout was posted on each; no other precautions were necessary.

The troop, in full field equipment, was dismounted to fight on foot under cover of spur at A and, deploying as skirmishers, took cover along crest A-E, two platoons of two squads each, each platoon placing twenty-four rifles on the firing line. Each man carried sixty rounds of ball cartridges; the platoons were commanded by the first sergeant and the quartermaster sergeant. Two assistant officers reported that they had ridden over the ground, posted the lookouts, inspected the targets, and that everything was in readiness for firing to begin. Each officer was then instructed to accompany a platoon but not to exercise command; to make notes of ranges estimated and rounds fired, defects in fire discipline, etc., and in particular to see that every precaution was taken in his platoon against accident.

Two selected shots—expert riflemen—were here detached to fire as sharpshooters from a covered position on spur E, as follows.

Sharpshooter No. 1 to fire at two mounted figure silhouettes, one black and one khaki, ten yards apart, visible on the crest of hill B, overlooking the Garden.

Sharpshooter No. 2 to fire at two standing figure silhouettes, one black and one khaki, ten yards apart, visible on edge of bluff at C.

Each sharpshooter was to fire ten shots at the black figure of his group and ten at the khaki, his entire twenty shots, including estimation of range, to be fired in five minutes. An officer supervised this practice.

The troop, from crest A-E, saw two targets exposed for its fire:

(1) Target B, stationary, 16 prone figures, khaki, in line along northeast slope of hill B.

(2) Target C, disappearing, 16 prone figures, black, in line just inside Garden, at foot of hill C.

Each platoon and squad leader was, as a test, required to call out his estimate of the range to target C; an average of these estimates was taken by the troop commander as the range for the initial volley, and three volleys by troop were fired at target C. The objective was then changed to target B, ranges estimated and averaged as before, and three troop volleys fired.

Target C disappears and the line is advanced toward the Hospital Garden; after having advanced some distance target C again appears (at signal from troop commander) and the line is halted for firing. The chief of the second platoon is ordered to open "fire at will" upon target C in his front, and keep up his fire as long as target is visible; he has already been directed to require his chiefs of squad to call out range estimates at every halt, but he may entirely disregard these estimates if he so desires. Similarly the chief of the first platoon is directed to open "fire at will" upon target B in his front.

Target C soon disappears, firing ceases, and orders are given to resume the advance. Suddenly a group of 6 kneeling figures—target D, disappearing—appears in the high grass on hillside D in position to enfilade the line at close range; the chief of the second platoon is ordered to refuse his platoon to the left and open "fire at will"; the chief of the first platoon requires his platoon to lie down under best cover attainable.

Target D disappears shortly afterward and the advance is resumed; target C soon reappears and "fire at will" is again opened by each platoon upon the target in its front; target C disappears, target D reappears on the flank and the second platoon has again to be maneuvered to fire to the left. Target D appears no more during the advance.

The troop is again advanced—always by rushes; target C reappears and "rapid fire" is ordered on both targets.

Target C disappears, and appears no more during the advance. After moving a few yards the line is halted by the troop commander who calls the attention of the platoon commanders to a new target—target E, stationary, 10 kneeling figures, black, in line—just now visible for the first time on the high hillside north of Troop "K" Garden road, about 300 yards northwest of the ford. Platoon commanders are directed to alternate in firing three volleys.

Advance is again made rapidly toward the Garden; when the line is about 75 yards east of the stream six moving figures—black silhouettes, kneeling—leave cover near the southern exit from the Garden; they move slowly at first, then rapidly across the open ground toward hill D. "Halt" and "commence firing" is at once signalled on the trumpet; "cease firing" is sounded after the figures have moved about 100 yards.

This terminates the firing, the led horses are brought up and the troop marches to the various targets to inspect results.

RESULTS.

First firing position:

(a) Sharpshooter No. 1, objective two mounted figures; estimated range 800 yards, then corrected by firing to 700, true range about 675. Shots fired, 20; hits, 4 on khaki, 1 on black. Percentage, 25.0.

Sharpshooter No. 2, objective two standing figures; estimated range 600 yards, then corrected by firing to 550, true range about 580. Shots fired, 20; hits, 2 on khaki, 3 on black. Percentage, 25.0.

(b) Troop volleys on target C:

Estimates of range—Chiefs of Squads, 1st platoon, 975,-750. Chief of Plat., 800. Chiefs of Squads, 2nd platoon, 800,-700. Chief of Plat., 800. True range about 715 yards. Hits not marked.

Troop volleys on target B:

Estimates of range—Average of estimates by all group leaders, 862 yards. True range about 775 yards. Hits not marked.

Second firing position:

(a) 1st Plat. Target B: Estimates of Chiefs of Squads,

500, 600. Chief of Platoon orders "Battle Sight." True range about 600 yards.

2nd Plat. Target C: Estimates of Chiefs of Squads and Platoon, 500, 450, 450. True range about 540 yards.

(b) 2nd Plat. refused position, target D: Estimates of Chiefs of Squads and Platoon, 400, 275, 350. True range about 390 yards.

Third firing position:

(a) 1st Plat. Target B: Estimates of Chiefs of Squads, 400, 400. Chief of Platoon orders "Battle Sight." True range about 475 yards.

2nd Plat. Target C: Estimates of Chiefs of Squads and Platoon, 375, 425, 450. True range about 415 yards.

(b) 2nd Plat. refused position, target D: Estimates of Chiefs of Squads and Platoon, 200, 225, 225. True range about 300 yards. Shots fired by 2nd Platoon on target D at 2nd and 3rd firing positions, 382. Total hits, 113. Percentage, 29.6.

Fourth firing position:

"Rapid Fire" on targets B and C; no range estimates.

Total number of shots fired on target B at 1st, 2nd, 3rd and 4th firing positions, 676. Number of hits, 82. Percentage, 12.1.

Total number of shots fired on target C at same positions, 644. Number of hits, 84. Percentage, 13.0.

Fifth firing position:

3 volleys each platoon on target E: Estimates of range: Chiefs of Squads and Platoon, 1st Platoon, 675, 700, 700. Chiefs of Squads and Platoon, 2nd Platoon, 900, 800, 800. True range about 680 yards.

Total number of shots fired, 144; number of hits, 27; percentage, 18.7.

Sixth firing position:

Individual fire at moving figures: Range about 175 yards. Number of shots fired, 346; number of hits, 86; percentage, 24.8.

NOTES AND CRITICISMS.

The firing line—48 men—consisted of 2 expert riflemen, 11 sharpshooters, 13 marksmen, 17 first classmen, 5 second class-

men. The troop had just completed target practice, collective figure of merit being 61.4.

In the first platoon the leader chose to use the "battle sight" for all ranges under 600 yards; in the second platoon the sights were required to be accurately set for each range, the number of hits made by each platoon on its own target was practically the same.

The rapid change of front of a designated group in the firing line to fire against a new objective on its flank is attended with more or less confusion and difficulty even under such simple conditions as given in the problem; such maneuvering of dismounted groups is good instruction at drill for both group leader and men, involving use of cover, estimation of range, and quick decisions on the part of all concerned. If target D group had been actually firing the percentage of loss in the second platoon in changing front would have been very high; the men bunch and are slow in reaching proper positions in proportion as excitement increases; of course a troop reserve on hill A-E would have met the situation properly.

Estimates of range varied greatly among the group leaders and was sometimes wild; thanks to the present very flat trajectory and the short ranges available, these errors in estimation of range were not very costly in the problem; in actual service, dismounted cavalry will often have to deliver long-range fire, as in rear guard delaying actions; in such cases good estimation of range will be essential in order to gain any fire effect of any value.

Both sharpshooters and almost all the members of the firing line disregarded the rests in aiming offered for the rifle by trees, bushes and rocks—a defect in our system of training.

There was noticeable the disregard for cover which seems to be inseparable from all our maneuvers; the only instructor who can hope for perfect results here is the enemy with ball cartridges.

The problem was so arranged as to make necessary frequent and wide changes in sight-setting; the directions of the group leaders in these cases were carried out by the men more carefully than had been expected; when occasion arose for "rapid

fire" many men in the second platoon failed to lower their sights as instructed; this error was not possible in the first platoon since the "battle sight" only had been in use since leaving the first firing position.

The rate of fire used by the men during "fire at will" was higher than that seen at drill, due in some cases to excitement but in most cases to a natural desire to make the most of the chances offered by a disappearing target.

THE USE OF THE BUZZER BY TROOPS OF THE LINE.

By First Lieutenant H. C. TATUM, Seventh Cavalry.

The use of the buzzer by troops of the line seems practicable and necessary for the following purposes:

First. As a means of information transmission in general reconnaissance, outpost and detached duties, which lie beyond the scope of its application by organized signal troops.

Second. As a means for preserving the strength of men and animals to meet the final situation of battle.

The practical utility of the buzzer has been well demonstrated at our maneuvers in the last two years. Our organized signal troops have not only been able to connect the commander-in-chief with his larger units by this means, but have succeeded in keeping the various independent detachments in communication with the main command during reconnaissance work, and to tie up their outpost lines at night, often as far to the front as the cossack post. These results have been obtained, however, under maneuver conditions, and where the opposing forces have scarcely exceeded a brigade on either side; with no communication to maintain between division and corps, or army headquarters. Under actual war conditions the first duty of the signal corps is with the higher units, and it is scarcely possible that it will ordinarily be able to function beyond the brigade or regimental headquarters. The proposed organization of signal troops provides one field company of about six sections, twenty men to the section, to supply the tactical lines for an entire division. On the march this company must maintain communication between the various columns, advance and flank guards, and with the command from which the division may be sent. In battle formation, it must tie the division to corps or army headquarters, the several brigades to the divisions and possibly the regiments to brigade headquarters. It may further be called upon to tie up a general

outpost line, and to keep in touch the several lines of attack. With this amount of work for the field company it may be seen that the brigade will never have with it more than one section to supply its tactical lines. This section is capable of maintaining a maximum of eight signal stations, including one flag or heliograph station. Therefore, while our maneuvers have demonstrated the utility of the buzzer far to the front, it is evident, that if we are to use it in all cases where its application is practicable and necessary, a part of the work must fall to the troops of the line.

Let us consider somewhat in detail, and in connection with the work of the field signal company, situations of active operations which call for the use of the buzzer by infantry and cavalry.

The division on the march, with trains, covers about eleven miles road space. The commander of this unit should be able to communicate with the tail of the column, advance and flank guards. He may further have to talk with army and corps headquarters, or cooperating divisions. The division may be marching on several parallel roads, in which case, intercommunication cannot be dispensed with. All lines are constantly changing. It is clear, therefore, that the field company's most difficult problem is the marching division. Assuming, however, that it will be able to provide information lines as far to the front as the support of the advance guard, there is still left much valuable work for the buzzer and buzzer line. It is at the support that the detailed reconnaissance begins, that rapid transmission of information is most essential and the work of man and horse is the most trying.

At each halt men must be sent from the support or advance party to hill tops, roads and trails for observation. The longer the halt the more important such duties become. Speedy reports are necessary. Without the buzzer two men are required for each hill or road—one to remain in observation and one to return with the report, which may often arrive too late. It is true that signals may often be given during the day by flags or improvised means, but such signals cannot be relied upon. They are apt to expose the observer's position, and it is quite usual that the best points for observation are not in sight of the detachment to which messages are to be sent. One man with the buzzer can do the

work of two. The light buzzer wire can be unreeled as fast as the man can go, mounted or dismounted, and while in position for observation, alarm may be given instantaneously, over the phone, or the movements of an enemy in sight reported progressively. The advantage of talking matters over by phone is evident. Important details may be cleared up and information transmitted which could never be contained in a written message, or reported verbally by an orderly. The Japanese applied the phone to advantage for such individual use, especially around Port Arthur.

The same advantages for buzzer use obtain at the picket, cossack, or detached posts, and to the more important sentinels of the outpost. These units tied to the supports by a buzzer line would secure timely information of the enemy and eliminate a greater part of outpost patroling, so trying on men and horses. The detached post guarding fords, bridges, hills and villages may be a mile from support for infantry or two miles for cavalry. Here, safety often depends on secrecy and quick communication. The clatter of horses' feet on the road often discloses the position and brings the post or patrol to grief. For such cases the buzzer provides the most expedient means for transmitting information and eliminates the patrol. The accidental discharge of a rifle or other false alarm on the outposts means patrols and unrest at the picket or support. Communication between neighboring supports and pickets is necessary. Intervals and distances between these bodies are not very great on an air line, but with intervening obstacles such as thickets, bogs, gullies, small streams, etc., the patrol must often traverse a mile or more. The buzzer obviates such difficulties. All these details of minor tactics may be of little concern to the commander of the whole, but they do mean a great deal to men and horses, and the subordinates charged with the duties of security and information. If the divisional signal company extends its lines to the reserve of the outpost, the buzzer has a sufficient application further to the front to justify its use by troops of the line. If the company's lines reach the supports, there is still important work for the buzzer to accomplish.

On the offensive, as exemplified by the operations in Manchuria, the modern battle is fought by slow successive stages.

Advance posts, key points and points of control, upon which to pivot an advance of the line or an extension of a flank, must be taken, step by step, by infantry regiments and battalions. Advances of the line depend upon the progressive reports from these positions. Telephonic communication is absolutely essential. Men of the signal unit fall with the others in battle. Lines are lost and destroyed with the loss and recovery of the positions. It appears that for this, the supreme situation, every possible provision should be made for the maintenance of communication.

On the defensive, before contact, every possible avenue from which the enemy might approach must be observed. This involves an extended front of widely scattered detachments far in advance of supporting bodies. These bodies should be able to provide their own lines at night as a matter of security and to afford some relief to horses and men. After contact, when the troops are in position, communication is of paramount importance. Coöperation and mutual support of all the elements of the defense involves wire lines from flank to flank and from the advance post to the commander-in-chief. If possible, every trench or redout should be tied to its neighbor and every advance post to its supporting body. It is true, that on the defensive the signal company will have the advantage of knowing beforehand where most of its lines are to be located. On the other hand, the number of its lines must necessarily be increased many fold. If one provision for communication fails another should be on hand to function. So important was the telephone to the Russian defense in Manchuria that many of the officers bought such instruments out of their own pockets for use with their regiments.

The extent to which the signal company will be employed with cavalry greatly depends on the question of mobility and the mission of the commander. Scarcely more than a single wireless section, for communication with army headquarters, will ever accompany cavalry acting independently. The buzzer, with such a command, however, has a special important application. The independent cavalry brigade acting as a screen may cover ten miles of front. The main column must have its own immediate outposts at night. The contact detachments several miles in advance must provide for their own security. If the column marches on parallel roads wire communication at night is the most expedient, and saves horses and men. Similar uses of the buzzer apply to the work of divisional cavalry. The cavalry raid calls for the extreme physical endurance of man and horse. For its outpost during a halt or during the execution of its special mission the buzzer line it seems would be invaluable in giving timely information and the much needed relief to men and horses.

It is not proposed that troops of the line should provide their own buzzer communication in any case where its employment is practicable by the organized field signal companies. To the contrary, the bad effect of the tangled and crossed lines that would result from an independent use of wire by both services, especially on outpost and on the battlefield, are fully recognized. The advantage of the specially trained unit for this work as far to the front as possible is obvious. On the other hand, the work of the signal company begins at division headquarters. Its first duties lie with the higher units. Questions of its own control, supply and coöperation must necessarily limit the distance to the front at which it may be depended upon, under all circumstances, to function as an organized unit. Therefore, in order to guarantee the services of a valuable messenger, needed in the every day work and in all the phases of active operations, the adoption of the buzzer by infantry and cavalry deserves our serious consideration.

If the buzzer has an application for infantry and cavalry it is worth using to the best possible advantage, and questions of equipment, transportation and personnel at once arise.

In the first place, the signal corps has developed instruments and equipment well adapted for all conditions of field service. Two types of the buzzer are at present employed—the field buzzer and the cavalry buzzer. Both of these buzzers may be used as either a telegraph or telephone instrument with equal efficiency. It is not proposed that the buzzer should be used by line troops otherwise than as a telephone. It is believed, however, that its adoption would naturally develop a number of good telegraph operators in our service, which would be advantageous in time of war. Of the two types, the field buzzer is the more substantial and gives more battery. It is also the more bulky and heavy; size, about 8x5x4 inches; weight, about 9 lbs. The cavalry buzzer

weighs about 5½ lbs; size, about 7x5x2 inches. This instrument is delicate and complicated in construction. Considerable technical training would be required for its general use. It possesses the advantage that it can be cut in on any existing telegraph line. This is especially important in connection with its use by cavalry. A third type of the buzzer, recently designed by Lieut. J. G. Winter of the cavalry, and at present under construction, promises to combine the advantages of the types named and to eliminate the disadvantage of the latter. It is about the size of the cavalry buzzer and weighs about 6 lbs. Its most distinguishing features are strength and simplicity of construction. All contacts are made by metal strips, no wiring involved. These qualifications at once make it the type best adapted for use by line troops.

There are two standard sizes of wire—field wire and buzzer wire. The field wire weighs 70 lbs. per mile and for use is generally carried on reels, by carts or pack mules. The buzzer wire comes in one-half-mile spools, total weight 5½ lbs. The spools are about four inches long by six inches greatest diameter. Both wires are necessary for efficient service. The former will stand rough usage. It will hold up under the heaviest wheel transportation and is therefore suited best for use as far to the front as the supports of the outpost. The lightness and portability of the latter make it specially adapted for the picket, cossack or detached post, and for individual use. By use of an accompanying ground rod as a spindle, it may be unreeled from a horse at a gallop.

A regiment of infantry as an outpost for a division normal formation, occupies a front of about 2½ miles at the line of sentinels and a depth of about 1 mile from sentinels to reserve. The reserve would generally be from 1 to 1½ miles from the main body On this basis 3 miles of field wire would tie up supports, reserve and main body, or pickets, supports and reserve. These distances would never be exceeded in battle formation. Five miles of buzzer wire would tie up all pickets and sentinels or cossack posts. Allowing 4 miles for detached posts, breakage and loss, the total buzzer wire per regiment would be 9 miles. To tie up all pickets, supports and reserve, which would seldom

be necessary, would require about 11 buzzers, allowing 4 additional for double connections, detached posts and individual use, gives a total of 15 buzzers per regiment.

A squadron of cavalry as an outpost for a cavalry brigade, normal formation, occupies an extreme front of 4,000 yards and a depth of about 3,800 yards. On this basis 3½ miles of field wire should tie supports and reserve, or reserve with main body; or it would provide a wire line between columns on parallel roads. Allowing, however, for considerable variation in intervals and distances which are usual with cavalry, 5 miles of field wire would seem a reasonable estimate for one squadron. The weight of field wire, however, precludes the possibility of an allowance of 5 miles per squadron. Field wire can only be used with the squadron when it is acting with its regiment—for example, as the outpost squadron—5 miles would then be the allowance for the cavalry regiment. This wire should be kept with regimental headquarters and shifted to the outpost squadron, or used for other regimental communication, as the occasion demands. The squadron acting independently will have to depend on the buzzer wire. From the above figures, 6 miles would tie up the entire outpost. Four miles for losses and other purposes, gives 10 miles of buzzer wire per squadron. Owing to the numerous detached duties of cavalry 2 buzzers per troop, 24 per regiment, is not thought excessive.

These estimates are based upon outpost dispositions as they represent the maximum distances for the use of wire lines by the infantry or cavalry regiment.

We have then for each infantry regiment:

3 miles of field wire, weight	210 lbs.
9 miles of buzzer wire, weight	100 lbs.
15 buzzers, weight	90 lbs.
Total	400 lbs.

For each cavalry regiment:

5 miles of field wire, weight	350 lbs.
30 miles of buzzer wire, weight	330 lbs.
24 buzzers, weight	144 lbs.
Total	824 lbs.

To the above should be added for infantry, about 20 lbs., and for the cavalry about 30 lbs. for buzzer wire reels. The equipment should also include a reserve of cells. Each buzzer requires three cells, which, with proper care, should last at least one month. Each cell weighs about ½ lb. Sixty cells, 30 lbs., for the infantry regiment, and ninety cells, 45 lbs., for the cavalry, would provide a battery supply for two months, allowing for bad cells.

Total weight, infantry, 450 lbs.
Total weight, cavalry, 809 lbs.

Considering the above weights, the character of the work with line troops, the question of mobility and distribution, pack transportation at once seems the best adapted for this service. It is believed that proper pack equipment could easily be devised to meet all requirements for the work.

As a tentative organization, a separate detachment of one non-commissioned officer and six privates is proposed. This unit is thought quite sufficient to meet all demands for regimental buzzer service. Its attachment to the Machine Gun Platoon for administration purposes, appears especially expedient. Such a detachment would possess the advantages of flexibility and centralized responsibility. It could be employed as a whole, with the regiment or a squadron or battalion thereof. With a suitable disposition of equipment, two men could be detached for each battalion or squadron, or even to the company or troop, or smaller unit, requiring buzzer lines. These two men could easily accompany the head of the column and provide the necessary buzzer equipment for individual use when needed. This detachment could lay and recover all wire, and distribute buzzers at points necessary during the occupation of an outpost, or for other purposes, leaving nothing for the other troops, but to use the telephone.

On the above basis, the accompanying tentative scheme of organization equipment and transportation, for the employment of the buzzer by infantry and cavalry regiments, is proposed.

While practical experiment would undoubtedly suggest a number of valuable changes in this scheme, it is believed that the

employment of the buzzer along these lines would materially increase the efficiency of our information service.

Tentative Scheme of Organization, Transportation and Equipment, for the use of Buzzer by Infantry and Cavalry Regiments:

INFANTRY BATTALION—Personnel: 2 Privates. Equipment: 1 mile F. wire, wt. 70 lbs.; 2 miles B. wire, wt. 22 lbs.; 3 Buzzers, wt. 18 lbs.; Buzzer reels, wt. 7 lbs.; 60 Cells, wt. 30 lbs.; total wt., 147 lbs. Transportation: 1 Pack Mule, 147 lbs.

ADDITIONAL—2 Buzzers, 1 mile B. wire, carried by detachment, 2 men to each battalion.

TOTALS FOR INFANTRY REGIMENT—1 N. C. O., 6 Privates, 3 miles F. wire, 9 miles B. wire, 16 Buzzers (1 extra for N. C. O.), 3 Pack Mules.

CAVALRY SQUADRON—Personnel: 2 Privates. Equipment: 9 miles B wire, wt. 99 lbs.; 6 Buzzers, wt. 36 lbs.; Buzzer reels, wt. 10 lbs.; 30 Cells, wt. 15 lbs.; total wt., 160 lbs. Transportation: 1 Pack Mule, 160 lbs.

ADDITIONAL FOR SQUADRON—2 Buzzers, 1 mile B. wire, carried by detachment, 2 men to each squadron.

ADDITIONAL FOR REGIMENT—5 miles F. wire, 350 lbs.; 2 Pack Mules, 175 lbs. each.

TOTALS FOR CAVALRY REGIMENT—1 N. C. O., 6 Privates, 30 miles B. wire, 5 miles F. wire, 25 Buzzers (1 extra for N. C. O.), 5 Pack Mules.

THE NATIVE SCOUT ORGANIZATION.

By Major J. N. MUNRO, Philippine Scouts.

There has been much recent agitation among scout officers and others regarding needful legislation for the scout organization. Many scout officers today overlook one vital question upon which depends all legislation touching the native soldier and his organization. That question is: "What is the United States going to do with the Philippines?"

It would be manifestly foolish for our government to provide an elaborate, or more or less permanent, native organization until a policy had been defined for the islands. That no such definite policy has been deemed wise by our legislators must be evident to those who have noted the tentative character of all acts affecting the Philippines; the conflict between the leading representatives of our press and the discussions in the halls of Congress on this subject.

What will be the answer to the above question is not my business and does not concern me. That it is coming soon I think we all believe. But, until it does come, no legislation of any importance affecting our native military organization need reasonably be expected. The present scout organization is sufficient to meet all present demands and is in line with our tentative insular policy. In fact I should say it has even a more satisfactory and definite character than could reasonably be expected. It is on a basis from which it can be readily expanded to a very satisfactory little army, smoothly and without any elaborate legislation. Its disbandment would be equally facile. This in itself is a point of no small importance to the scout and his officer. On the whole, I should say that the policy of our government with respect to the scout organization has been exceedingly farsighted and wise. To be sure there are certain things that, to secure individual justice, would seem to need attention.

I have no desire to discourage any attempts to secure a better or more permanent organization for our native soldier, or a more satisfactory status for him. Until the settled policy of our government warrants a more permanent native force, the following points have suggested themselves to me as worthy of attention.

ORGANIZATION.

As previously stated, the present organization of scout battalions, with a percentage of unattached companies, is perfectly satisfactory for present conditions. It establishes a basis for readily expanding our native contingent when conditions warrant. It gives the necessary training to scout officers in administrative duties which will prepare them for similar work in any larger administrative unit and it is well adapted to the work in which not only scout, but regular, organizations in the islands have been engaged for the past five years or more.

Any larger unit than a battalion would serve no particular purpose at present. Even with the battalion organization it is extremely rare that a battalion can be held intact. Two companies at most are all that the battalion commander can hope to have under his direct command. Under conditions such as these, a larger unit, as a regiment, would simply be a farce and accomplish nothing that could not be as readily performed by a battalion. Conditions are changing, we all hope, and the time may not be remote when a regimental organization will be found advisable. If so, our present organization is the very best preparation for it.

There are directions, however, in which I believe we might profitably expand. One of these has been forcibly impressed on me by the service in Samar, although the idea was conceived long ago. This is the organization of at least one battalion of native pioneers. Such an organization could, I believe, be made efficient with less trouble, or training, than any other branch of the service and would be most useful.

The skill with which the average native uses the simple material at hand for every form of construction is a matter of common knowledge. His knowledge of cordage seems to be born in him. Practically every form of serviceable knot, lashing, or tie, may be found in the structure of the simplest native shack, not

of cordage, to be sure, but what is far more important, of bejuco, or any one of a number of varieties of vine that are to be found on every mountain trail. Examine a bridge built by a native road gang over a stream on a mountain trail. Do you find nails, spikes, planking, or expensive dimension stuff? Not a nail, not a plank, not a square timber. Every piece of material in the entire structure was found probably within two hundred yards of the bridge, and perhaps the only tool that assisted in the construction was the ever-present bolo. Every joint in the structure lashed with bejuco, or in the absence of that most desirable material, with strands of tough vine, bark or withes. Every joint perfect, structure properly braced, and solid. Yet not a man in the gang ever heard of Beach's Engineering. They never had any instruction in cordage or lashings so far as they know. A pioneer organization of such men with their knowledge systematized and aided by training would, under intelligent supervision, be invaluable in front of an advancing column in a tropical country such as this.

To return to the bolo, I will venture to say that three natives with good bolos can take the lead of a small column and slash a trail through the average tropical mountain forest as fast as the column could march in file over that character of country were the trail already there. It is unnecessary to enter into any discussion of the value of such work.

In water the average native is at home, the dirtier the water the better. With small boats he is an adept. He *has* to be to live in his own country. Temporary rafts, hasty devices for crossing streams are daily incidents in his life. And in mud he is in clover. He has contended with it all his life.

It is unnecessary to cite any more of the natural qualifications which the native possesses for this work. In the first place I suggested one battalion of pioneers. This, of course, merely as an experiment and to test the value of such an organization. For actual field work the number of such pioneer battalions would depend on the work in hand.

In recruiting for a pioneer organization nothing but the working class of native should be enlisted, except a few bright men of more than average education to serve as non-commissioned officers and to assist in training the privates.

Such an organization would present a good opportunity for some ambitious young engineer officer, and the non-commissioned personnel of our engineering corps.

Another idea which long ago occurred to me is that of mounted scouts. It may be well to state in the beginning that the first native organization which was given a status was intended to be a squadron of cavalry and was so designated. The entire equipment, fitted for native ponies, was made in the United States and shipped to the Philippines. The money for the purchase of five hundred ponies was appropriated. I had been informed by the squadron commander that I would be detailed to purchase the ponies. But, through some hitch, the ponies were never purchased and the only mounts that came into the possession of the squadron were some captured ponies which it was permitted to keep. One troop had forty such ponies and forty men of this organization were trained as cavalry and made excellent progress. Many of their mounts when captured were mere bags of bones, but after a few months of care, although almost constantly in use, became excellent, well conditioned animals. This troop was commanded by an officer who had had considerable experience as a non-commissioned officer in the cavalry service and was one of the best drill instructors I have ever seen.

The average native knows very little or nothing about horses and their handling and there are many who will say that any idea of a mounted native organization is ridiculous and would merely be waste of time and money. I remember very distinctly any number of officers who said the idea of native scouts was ridiculous and could only result in a miserable failure and probably disaster for their officers. I believe that a creditable mounted native organization is perfectly feasible.

Results cannot be expected at once. The training of such an organization is going to require time; it is going to require patience; it is going to require much hard work. The trouble with us is that we expect immediate results. We are an energetic, rapidly moving people. I would not expect marvelous results at first. A thoroughly trained organization could not be made in six months, or a year, or even in an enlistment possibly. But it can be made.

If there is one thing above another that the native Filipino needs to learn it is a knowledge of horses. I know of no better way to begin to disseminate a little of such knowledge than by thoroughly training a mounted organization. This in itself would seem to be sufficient reason for organizing at least one squadron. It is fully authorized by the act of February 2d, 1901, and requires no legislation.

The troop officers should be carefully selected from non-commissioned officers of the regular cavalry service, young enough to be enthusiastic and of sufficient service to be thoroughly experienced. There are a number of such who are scout officers now. There should be three officers to the troop at all times for at least one year after organization.

The troops should be smaller than the present companies, probably not more than seventy-five men, carefully selected. There should be an experienced horseshoer and farrier detailed to each organization to thoroughly instruct selected men for these positions. Eventually such details would be no longer necessary. Mounts might be either native, or Australian ponies. Otherwise, the organization to be the same as for regular cavalry. Changes in equipment adapted to the native soldier should, of course, be made and would suggest themselves as the organization progressed

I would like to see this organization tried out, although I know it would require a greatly increased amount of discouraging and apparently thankless work.

There are several changes badly needed in the present organization. One of the first and most pressing needs is the addition of three battalion non-commissioned staff officers; a quartermaster sergeant, a commissary sergeant, and a color sergeant. Battalion quartermasters frequently are so situated that they have the work of an entire post to perform without the assistance of a post quartermaster sergeant, or post commissary sergeant. This is too much work to expect of one man when the voluminous clerical work of these offices is considered. It has been found absolutely practicable to train native battalion sergeants major in their duties so that they require the merest supervision. There is no reason why similar men should not be trained in the clerical

work of the other staff departments. It will be simply a preparation for the proper equipment of the staff departments of larger administrative units in case these are ever warranted.

The battalion quartermaster sergeant could perform the duties of post quartermaster sergeant, while the commissary sergeant could perform those of the post commissary sergeant. The color sergeant could perform the duties of provost sergeant and at formations carry the recently authorized battalion colors.

Since the provisional bands have been authorized there should also be some provision made for a band leader. A suitable leader cannot be secured for the ordinary enlisted pay of the rank and file and he must be maintained at the expense of the officers and organizations of the battalion.

Aside from the above I would suggest no immediate change in the present scout organization.

A limited number of companies and few more battalions might now very well be added to the present force, but that requires no legislation, or change of organization.

RECRUITING AND ENLISTMENT.

Absolutely no recruiting for scout organizations except by experienced scout officers and surgeons should be permitted. Anybody cannot enlist native soldiers, no matter what his experience as a recruiting officer may have been, and get results. To enlist natives intelligently requires experience as a scout company officer, a considerable study of the native character as shown by his features, actions, and a thousand other things that are learned only by experience.

What is true of the recruiting officer is true also of the examining surgeon. There are a dozen physical reasons that should bar a native candidate for enlistment that only an intimate knowledge acquired by practical experience will reveal. For example: a native once a victim of beri-beri should never be enlisted or reinlisted. He may appear perfectly sound and healthy, but he will not stand the test of service. There are diseases to which the native is subject which will never be discovered in the ordinary examination of a recruit and must be sought for. One of these, a most rare disease, has recently been

discovered accidentally in my own command. This is commonly known as fluke worm in the lungs. It is incurable at present and its means of transmission and source are unknown. Surgeons detailed to examine native recruits should have had sufficient experience to know what they are about.

Recruiting should be by company officers even in the case of a battalion, unless the battalion commander knows that he has an officer especially fitted for this work. The present scheme for recruiting, recently adopted by General Wood, is on this line and is excellent.

The return of a scout organization from hard field service to their tribal home at about the date of their discharge, and recruiting gradually right on the organization's native heath cannot help being productive of the best results. It gives the soldier an opportunity to visit friends and tell them about his services. They are great home people. The average native travels but little. A journey from his province to a strange one is a more important event to him by far than a journey from the United States to the Philippines is to the average American. These things must be considered if we are to get the best results from our native soldier. He should feel reasonably certain of a return to his native land after a tour of duty well performed in a distant province. The time may come when he will be sufficiently Americanized so that home will mean nothing to him. But not yet.

Tribal lines should be maintained in all organizations up to and including battalions, but not too strictly. Many desirable men are found who get on well in tribes other than their own, although as a rule this is not the case. Such men should be permitted to remain with their adopted tribe and will be found specially valuable to their organization when serving in their own tribal jurisdiction. Such men, if it is found advisable, could very easily be transferred to an organization of their own tribe at the end of a campaign, or when the organization to which they belong is sent to the home station.

The term of enlistment should be longer. A majority of scout officers whom I have consulted favor five years. An enlistment should begin with at least a six months' probationary

period. This would determine the man's fitness for the service and would probably develop any insidious disease which might have escaped the recruiting officer. His discharge during this period should be easy and not require the official routine now necessary. The only proper judge of any man's fitness for the service is his immediate commanding officer, who sees him and labors with him daily.

The age limit for scout recruits should not be over twenty-five years and the inferior limit might easily be as low as sixteen. The native develops rapidly, reaches his best early, and declines very rapidly. A man enlisted at thirty seldom improves much, and learns slowly, while at twenty the native improves rapidly under intelligent instruction and with military training develops a much better physique than he otherwise would.

There could be the same inducements to reinlist for the native soldier that there are for our American soldier. This matter, with others of a similar nature, will adjust itself I have no doubt, if the native soldier is ever given a permanent status. He should be given the reward of both continuous service and re-enlisted pay. The latter has been adjusted by recent orders Some scheme for retirement and pension should be adopted. Inasmuch as the native does not as a rule retain his vigor to the same age as the American soldier, the service for retirement should be shorter. Five five-year enlistments will be all the service we can expect from the average native. In fact, scarcely so much can be expected. Retire him after twenty-five years' service on half pay and allowances and he will be perfectly satisfied. Men disabled in the service should be taken care of in some way. A soldiers' home could be established at very little expense, on the same principle as our soldiers' homes in the United States. Useful employment for such of the inmates as are physically able to work could be provided and by sale of their work practically defray expenses. A scheme of the kind has been outlined by Major H. S. Howland, Philippine Scouts. This, however, cannot well be arranged until a reorganization of a permanent character is effected.

I am not in favor of the latest increase of pay. The principle of this increase I do not think was the best. I believe, how-

ever, that a considerable increase of pay for the non-commissioned officers would be wise, especially for the higher grades.

A scheme whereby this could have been done without material increase in cost to the government has been suggested to me by Captain Halstead Dorey, 4th Infantry, who, under General Wood, had charge of scout matters and has studied the scout situation carefully. I believe it a good one. Roughly, it is this. Grade the privates into first and second classes. Let the recruit enter as a second class private at ten pesos per month. Upon promotion to first class private increase his pay to fifteen pesos per month. Apply the money thus saved on second class privates to increase the pay of the non-commissioned officers, especially in the higher grades. In addition to the above I believe the following conditions should obtain. First class privates not to exceed at any time fifty per cent of the strength of a company. All non-commissioned officers to be selected from first class privates. No private on his first enlistment to be promoted to first class private during his first six months unless he develops unusual qualifications during that period.

I am strongly in favor of keeping the pay of the native private at its lowest limit. Conditions which surround the class from which the scout private invariably comes, are in no sense the same as those surrounding our regular recruit before his enlistment. A regular income of ten pesos per month with his ration and allowance for clothing is opulence to the Filipino; something absolutely out of his reach before enlistment. His case is not parallel with that of the regular recruit. Just as surely as we give him more money than he really needs we are going to spoil him, just as we have spoiled the native in general by our careless extravagance in respect to money. At the very first opportunity let the scout pay be readjusted along sensible lines and with some consideration as to his needs and character.

CLOTHING.

The present clothing as issued to scout is very satisfactory. I assume that the scheme now in progress of having the khaki clothing made in Manila, in sizes obtained from actual measurement, will be successful and will be continued.

A few changes however suggest themselves.

The present campaign hat is not satisfactory for field service. It has never been satisfactory for the character of campaigning usually performed by native soldiers. In marching through thick cover it is impossible to keep it on the head. Besides it is heavy and expensive. A hat similar to that now in use by the constabulary would be much better. It is light, adapted to close country, and inexpensive. But still, it is not the best form of headgear and I would recommend the retention of the campaign hat until something is found not having the disadvantages of the constabulary hat, the most serious of which is its loss of shape after a little wear, causing it to crush down on the crown of the head, a serious matter under a hot sun.

It is hard to say just what form of shoe would be best for campaigning in the Philippines. I am convinced that there is no shoe made that will last any length of time in Samar. A moderately good shoe is just as serviceable as an expensive one. Continuous field work will put the expensive shoe out of commission almost as soon as the cheaper quality. There is no leather that is going to stand continuous soaking, combined with exposure to knife-edged rocks. A light leather shoe with a good strong sole, light bellows tongue, and about an inch higher than the present garrison shoe, is about as near what conditions demand as I can come with my present experience. Of course it would not last perhaps more than one or two good hikes, but neither will any shoe. Three days is about the life of the regulation shoe under conditions as found in Samar. Whatever shoe is adopted should therefore be inexpensive.

Some form of foot hold is absolutely necessary for mountain work. The most satisfactory scheme so far discovered that has come to my notice is the ordinary baseball plate. A number of officers have used these with great success. Something of the kind simply must be adopted. No form of leather cleat will answer and I believe that the baseball plate or a modification of it is the best solution.

Personally, I am convinced that the canvas rope-soled shoe is a failure. I discarded them after one trial. They furnish no support to the ankle, something that is most essential. They

promptly spread from soaking and hiking and so far as any support is concerned one might as well be barefoot. Every slip or misstep on a rocky trail means a painful blow, perhaps even a wound, from a sharp rock or thorn, against which this shoe is no protection. The rope sole instead of being a guard against slipping, is most treacherous, especially on grass or fallen timber. I usually carry a pair of these shoes for camp wear, while my others are being cared for. For this purpose they are excellent.

The canvas leggin is absolutely useless for field service. Never, in any of its various forms, has it been satisfactory, and the present abortion is only a little worse than the previous issues. It is a pretty safe rule that necessity is the mother of the best inventions and that what a man improvises to meet any particular condition cannot be improved on very much. The various expeditions in the Samar campaigns, both scout and regular, exemplified this principle in the matter of leggins. They went into the field equipped with canvas leggins; they returned with their bed blankets shorter, or narrower, by some six inches, and a blanket bandage where the canvas leggin had been, simply an improvised wrap puttee. It stood the test and it is the only leggin that will, for the class of field service required in the islands at least. It is the only leggin that will keep out leeches; that will not constantly keep catching on hooked thorns or coming undone. Furthermore, it has no shape to lose and always fits. Two pair can easily be carried so that each day's march can be begun with a dry pair of leggins, though this is a point of no importance. Just what form of this leggin is the best I am not prepared to say. Personally, I prefer the straight bandage, wrapped just as the ordinary roller bandage. A woolen leggin is probably the best for the field, although I have used most successfully a leggin made simply of a double thickness of khaki. I have used this for swamp work and found it most satisfactory. I have permitted my men to use these leggins simply to watch the effect. They have learned to wrap them with extreme neatness and they make an excellent appearance. They would certainly be a cheap leggin if found satisfactory. If this leggin is eventually adopted, as it seems likely that it will be, the shoe used with it should be an inch or an inch and a half higher

than the present garrison shoe so as to give the leggin perfect contact with the shoe top for at least two or two and a half inches.

As the scout is at present essentially for field purposes only, no other changes in the uniform are important. When the time comes, as it undoubtedly will, when the native organization spend a considerable portion of their time in garrison, some sort of simple, dressy garrison uniform should be devised; for the scout soldier is proud of his uniform and prone to "dress up" when opportunity offers.

The only other change that might well be made in the uniform is the use of the light woolen khaki colored shirt instead of the blouse for all purposes except ceremonies.

EQUIPMENT.

The present field equipment required for the scout soldier is simply ridiculous. He is supposed to carry everything required by orders for our regular infantry. Some scout officer, who was required to make a practice march under the orders for field instruction recently in force, had the curiosity to weigh his company. He found that the average weight of the individual soldier in that company was about one hundred and twelve pounds. When one compares this with the weight of the average infantryman and then considers that standing orders for the past few years have made no distinction between the equipment of the two, ridiculous is really a mild term.

The original scout was not troubled with equipment. He was required to carry nothing but his gun and belt. If he carried any rations, it was merely a few pounds of rice tied up in a handkerchief and fastened to his trousers' band. Every third or fourth man probably had a can of salmon or corned beef. There might have been half a dozen tin cups to the company, but empty salmon cans were much more popular. Some few canteens were distributed throughout the command. No one had any shoes or any semblance of uniform.

Now this was the other extreme. It resulted in much sickness (though not nearly so much as one might suppose) and lowered the efficiency of the command. There are many officers

who maintain today that it was a mistake to give the scout shoes. This is not correct. No man is at his best on the trail when half his attention is given to nursing a lacerated or festering foot, and that is what thirty per cent of my men were doing in the latter part of 1900 and early part of 1901, until shoes were issued.

From no equipment then, we jumped to an elaborate one that is useless or worse. The full field equipment for the scout at present weighs fifty-seven and one-half pounds. The average weight for the scout, as has just been shown, is one hundred and twelve pounds. This weight is correct for all the tribes except the Visayan, who will probably average somewhat heavier.

We have put on the scout over half his own weight and expect him not only to hike along cheerfully day after day but to be ready to jump in any minute and put up a good fight. A little observation as to just what the scout himself uses when in the field will give a pretty good idea of what he needs. Leaving aside the consideration of his arms for the present, the following equipment will be about all he requires:

A light woolen blanket. This is not an absolute necessity if an extra woolen shirt is carried, or some form of combined shelter half and cover is provided. The shelter half is of little use to anyone as a protection from rain and as a tent pure and simple it is of no use to the scout. When he uses it at all, he ties the ends in a gather and makes a hammock of it. This gives a good suggestion for remodeling the shelter tent in the scout's case. If a scout organization goes into temporary camp for several days, the men promptly construct shelter from the material at hand. In the cogon country, grass huts can be put up sheltering say a squad each, in a very short time. These make excellent shelter and will last for weeks; with slight repairs, even for months. In timbered country, pole and leaf shelters are easily constructed, so that all the scout needs in the way of shelter as part of his equipment is something for an over night camp. I understand that any number of schemes are being worked out by scout officers in line with their experience with the shelter half and doubtless some one of them will be adopted which will do away with the shelter tent and its worse than useless poles.

An individual mess kit for scouts is unnecessary. You can make them use it of course, just as you can make them do anything else with a little insistence and proper persuasion. But they don't need mess kits any more than they need overcoats. Two or three scouts will get around a single mess pan and get along all right with it, thereby saving much washing of dishes. The knife, fork and spoon, of course, are articles which are as essential to the scouts' well being in the field as brass bedsteads, and as they have been worrying along some time now without the latter it is to be presumed that they could manage without the knife, fork and spoon.

The original scouts had no mess kits. On taking the field the only cooking utensils carried were a few empty corned beef or salmon cans and about every sixth man had a small earthenware pot concealed about his person somewhere. How these pots survived a ten or fifteen days' expedition I don't know and I don't worry about it. Of course they didn't *all* survive but there were always enough left to get along with. Now I am not advocating the earthenware pot, but its use simply shows that some sort of simple cooking utensil large enough to cook rice for four or more men is what the scout soldier needs. Something that can be carried by one man and will answer for four or more. The natural resources of the country will piece out the mess furniture. A joint of bamboo, for example, makes a good vessel for cooking rice.

A tin cup to every fourth man is enough. Each man should have a canteen. The mess kit should really depend on circumstances. If transportation is available, then a simple company cooking outfit should be taken. This could consist of a nest of small kettles similar to the camp kettle and a couple of frying pans or tins. In this case each soldier should carry no cooking utensils except possibly a small flat tin cup. The present tin cup is too large and its cylindrical form makes it hard to dispose of. If any of the smaller articles are carried, let it be the spoon. If no transportation is available, then one of two methods should be adopted or both worked together. The first is to give to each squad two vessels just large enough to cook, one the rice and the other the coffee, for each squad. Let them be of such a

shape that they will fit over the bottom of the knapsack (for a knapsack of some form is what is needed for a pack) and of unburnished metal, light weight. Make no provision for cooking meat, because the scout will cook it with his rice anyhow, or mix it with wild vegetables and make "gulay." He fries no meat.

The second method is to give each man a canteen of a flat oblong shape, with a tin cup that fits over the bottom of it and a single mess pan which fits over the side of the canteen, the whole enclosed in a canvas sack just tight enough to prevent rattling. Then each man is independent and he is not constantly losing the top of his mess pan or banging his tin cup against brush and trees on the march. This combination canteen should be carried on the back of the knapsack, just where the scout carries the present canteen. It should have lugs like the present canteen, so that it could be carried on the belt if the pack is not carried. With the squad mess pans, if a squad is detached they are independent of the company cooking outfit. The same is true of the individual mess kit but it is not so suitable to the scout's habits.

The very simplest form of pack should be used. The present haversack is entirely too large and the way it is carried, attached to the belt, is not satisfactory, though this has recently been changed for scouts. A small light knapsack carried well up from the belt and supported from the shoulders is what we need. Any large quantity of rations will have to be carried by transportation anyhow.

The cargadore is the best scout transportation, and there should be twenty-five enlisted cargadores per company at all times. These men could be secured for not to exceed twelve pesos per month and rations. They would form a nucleus for a larger cargadore train when actual field operations made this necessary.

It has been found that cargadores employed for some time with a company become much attached to it and can scarcely be driven away when their services are no longer required. They are loyal and give no trouble. When field operations become necessary and an attempt is made to hire cargadores in the dis-

affected region, it is almost impossible to secure them. This was the case in Samar. But the cargadores that accompanied the scout companies from Luzon to Samar were found most faithful and remained to the very end, although of a different tribe from the companies they packed for.

The cargadore is cheaper than any other transportation for scout work. It costs $1.00 per day to maintain an American public horse in the Philippines. A pack mule may cost a trifle less and a native pony perhaps slightly less than the pack mule, but not much. Cargadores at twelve pesos per month would be cheap in comparison. They can go wherever the scouts can and as their loads are consumed they become valuable as trail clearers, litter bearers, and for work about camp.

It has been found that one cargadore can keep one scout in the field ten days, carrying his own and the scout's rations. Twenty-five cargadores could then keep one hundred men in the field two and one-half or three days, and if the men carried two days' rations each this would be extended to five days. This was found to be true in the most difficult of country where the extreme load for a cargadore was forty pounds. In anything like decent country this load could easily be increased to sixty pounds for the best class of cargadores.

With twenty-five cargadores at all times, when trouble actually occurred and cargadores were needed, these twenty-five could very easily find among their friends enough men to promptly fill the company train to one hundred if necessary.

While in garrison, the regular company cargadores could be used by the post quartermaster about the post for grass cutters, stevedores, and a hundred other things for which native labor now has to be hired at as high as one peso per day, or soldiers detailed on fatigue, a most mistaken economy.

The pack train at a scout post, during peace times, is practically a loss to the government unless it is used to supply the post, which is seldom the case. The cargadore train on the other hand would render valuable service, doing the work now performed by expensive native labor. Their presence would permit company commanders to have practically the entire strength of their companies available at all times, with the exception of a

clerk or two on duty in the supply departments. If a battalion, quartermaster sergeant, battalion commissary sergeant and battalion color sergeant were allowed for scout battalions, the detail of clerks from the companies would be no longer necessary and the strength of a company on its morning report would mean something.

The organization of a permanent cargadore train is one of the most important needs of the scout organization today and its consideration should be taken up at once.

At present the scout is armed exactly the same as our infantry. Although I may not be wholly in sympathy with the present new Springfield rifle as a scout arm, I prefer it to any return to the prehistoric. I have no sympathy with the idea that our native soldier should be armed with a very much inferior arm for reasons of possible unfaithfulness. If he cannot be trusted, then he had better not be employed at all.

The present remodeled Krag carbine as issued to the Constabulary I believe to be an excellent weapon for the native soldier. It is accurate and effective. Its scores have not been badly shattered on the rifle range so far by the new Springfield, though the latter is undoubtedly much the superior target rifle. This remodeled carbine with its bayonet is more nearly proportionate in size and appearance to the stature of the native soldier than any rifle I know of. There is, of course, the obvious drawback of having two kinds of rifle ammunition to look out for and the chance of their becoming mixed in an action and causing disaster. At any rate I believe every scout officer should have the latest model rifle and be thoroughly instructed in its use. He should be required to fire the regularly prescribed course of target practice and should be eligible to take part in the division rifle and pistol competitions, especially since, under the new firing regulations, commissioned competitors do not in any way interfere with the enlisted competitor's chances for the team and fire for medals only.

INSTRUCTION.

The instruction of scout organizations is at present carried out according to the official drill regulations and orders prescribing instruction for regular troops. It is a question as to whether this produces the best results or not. I believe in a great deal of formal, exact drill for native soldiers. It has a tendency to make them alert and preserves discipline. They need it far more than our regular soldiers. For this class of instruction, the drill regulations are all right. Aside from this, I am in favor of departing materially from the orders which govern the field work of the regular troops. The ordinary short practice march required by standing orders is of no value to the scout. The heavy equipment wears him out and he loses interest. In place of this, let the scout organizations take lengthy marches of two or three weeks with such equipment as their officers deem necessary. On these marches have them build several camps of the material at hand and remain in these camps several days at a time. Teach them to make their camps sanitary; instruct them in the simple devices for rendering doubtful water safe; for cooking meals without betraying their camp; and a hundred other things that will suggest themselves to every scout officer. Make the march a diversion as much as possible; let them hunt and fish and teach them how to hunt the game of their country properly.

The Filipino is no hunter; he hasn't the faintest idea about hunting as we understand it, and for that very reason he is no scout and never will be. But he can be improved some. Let the signal practice taught in garrison be put to practical use in the field and improvise signal practice adapted to scout work. The native soldier takes readily to signalling and rapidly becomes proficient in it, strange to say, retaining his knowledge of it longer than the average American soldier, to whom the whole thing is a bore.

Another thing that could be carried on to advantage on these marches is practical firing. Let the range instruction be made practical by estimation of short ranges and firing at objects where the effect can be seen. This assumes, of course, that all marches are made in practically uninhabited sections of the country, preferably the mountains.

A sort of rendezvous camp where several battalions of scouts could meet and remain together, or near each other, for several weeks in the dry season would be an excellent scheme. There

are many suitable places for such camps in the foothills of the mountains of Luzon and doubtless in other parts of the archipelago. Here scout officers could get together and try out schemes in equipment, methods of instruction, field work, target practice, etc. The ordinary company or battalion maneuver is of little benefit to scout organizations. The element of actual danger is lacking and this takes the incentive from the native and he cannot be made to show up at his best. This is only natural. The same applies to our regular soldier perhaps in a less degree.

The issue of General Order 101, War Department, 1907, prescribing the allowance of ammunition and material for target practice would indicate that a false impression prevails regarding the employment of the native soldier. This order gave him an allowance for target practice the same as the Indian scout and apparently regarded him as in the same class. The unfortunate name "scout" is perhaps responsible for this, although that is hardly a good excuse. The day of the Indian scout is gone. The native scout, as I have previously insisted, is no scout at all. His work in every respect is similar to that of our regular organizations. He operates as an organized company or battalion of infantry, under regularly appointed officers and fights according to the accepted theories of the art of war. Strictly speaking, the native scout organizations are merely native infantry. They should therefore be made effective as such, or their use discontinued. The day when we may be compelled to put our native contingent on the offensive against a foreign invader may not be far distant. Not so very long since it looked as if that day had already arrived. No soldier is effective until he can effectively use his rifle. The allowance of ammunition prescribed for scouts by the above mentioned order was about one hundred rounds of service ammunition per year, not enough to keep a good rifleman in decent form. When one considers that in the native soldier he is dealing with an individual who has absolutely no knowledge of the rifle and its proper use, this allowance is simply ridiculous.

The ordinary work of native organizations does not require sharpshooting or long range work. They should be made proficient in short range work of all kinds and a sufficient allowance of ammunition for this purpose should be made. The course suggested for scouts by Circular 1, Phils. Div., 1907, is excellent. It requires at least three hundred rounds service ammunition per man per year to carry it out. This was the allowance suggested by the division commander, who, being on the ground and thoroughly acquainted with scout organizations and their work knew what they required.

The scout's idea of the proper use of the rifle at present conforms very closely to that of many of our military authorities including a number of our regular officers, to-wit, a large and continuous expenditure of ammunition in the general direction of the enemy without individual aim, commonly referred to as "volume of fire." If volume of fire is what we want, the native scout needs no training. All he requires is a rifle and continuous supply of ammunition and he will produce a volume of fire that cannot fail to please the most fastidious exponent of this principle. Just how effective this is we all know.

If he is to be made an effective rifleman according to American ideas, he needs practice, intelligent supervision, and plenty of it. If he is to have the practice he must have the ammunition. General Order 81, War Department, Series 1908, gives him a similar allowance to that of regular troops, which is sufficient.

OFFICERS.

Too much care cannot be exercised in the selection of scout officers. If the organization expands and becomes a permanent one, doubtless eligibility will be extended to a larger class of persons. For the present it answers every purpose. The selection of non-commissioned officers from the regular service should be made with care. Scout service needs active officers. It is useless to appoint men who, from age or other causes, are not physically able to perform their field duties. Age should not be a bar absolutely as many men are physically active at an age when the average man has passed his usefulness as a company officer. But the applicant's age should in every case be taken into consideration and young men appointed as far as possible.

Every officer appointed to the scouts, as they are at present organized, should have a good knowledge of company papers as every original will have to be prepared by an officer.

Promotion should be by seniority except where it is found that an officer has shown either by a lack of interest or ability that he does not deserve to be promoted.

Some inducement should be given officers for acquiring a good knowledge of the native dialect, especially that of their own organization.

Some scheme for retirement of officers will have to be found if the native contingent ever becomes permanent. Just what is best and gives justice to all is hard to say. Officers are not agreed on it by any means. That it cannot absolutely conform to the retirement laws of our regular service is certain. Service in this climate and under the conditions usually to be found at scout stations is going to break down and age the average American officer much more rapidly than conditions ordinarily found in our regular service. The proper age, pay, etc., for retirement under tropical conditions will have to be carefully worked out with justice to all.

If a permanent native force becomes a fact, there will have to be many things taken into consideration and the present regulations which govern the service of the officers of our regular army cannot be made to apply to officers serving permanently with native troops. This has been recognized by other powers with native armies and doubtless will be by the United States. The length of time an officer can serve continuously in this climate without material injury; the proper age for retirement of officers in this branch of service; the proper length of service for voluntary retirement; the proper proportion of pay for such retirement; the proper leave allowance for this class of service and a dozen other elements of consideration must be carefully weighed. Everyone realizes, I think, that the present law which gives scout officers double time for Philippine service upon re-enlistment in the regular establishment is due simply to the fact that no provision was made for retiring them as officers and they can therefore quickly attain the necessary service to retire as enlisted men usually with a good grade. In the meantime, while

attaining the necessary service, the scout officer receives good pay and can, if provident, save considerable of it. This allowance of double time could not of course apply with a permanent organization where the provision for scout officers' retirement, as such, existed. No law should, however, be passed which would deprive any officer of the benefit of double time provided he had entered the scout service under the present law, and all scout officers in the service at the time any new retirement law goes into effect should be specially considered and compensated for any loss in his length of service which such act might impose and for which he had every right to expect to receive credit.

I am not in favor of the appointment of any native officers under the present provisional organization. They are not a success and that is a plain statement of fact and can be substantiated. They get no results from their command and some other officer, probably junior to them, has to do their work. They lack the ability to command and do not hold the respect of their men. A man who might be an excellent non-commissioned officer is ruined by a commission. No native officer should have command of a company. This has been found to be the case in our Constabulary in practically every instance that has come to my notice. If there are native soldiers who should be rewarded, a way should be found which, while it rewards fully an individual, will not at the same time prove a detriment to the service. There can be no merit in any system which, in order to reward one individual, may ruin the discipline and materially lower the efficiency of an entire company of soldiers. They might be appointed officers and put into a secret service system, where they will exercise no command and at the same time will perform valuable service and service for which they are best fitted. Some such service is needed and is now maintained in a way in the Constabulary. But whatever is done, keep them away from command of organizations. If the time comes when they must be appointed, as in the case of a large permanent native force, let their status be that of the native officer in the British Indian service. Theirs is the result of years of experience, which our country has not had, and is worth considering.

DISCIPLINARY MEASURES.

The present method of applying disciplinary measures to scouts by means of the general court-martial is a mistake. The same is true of the limits of punishment as prescribed by the court-martial manual. When a scout soldier goes up before a court composed of officers without an intimate knowledge of the scout and his characteristics, one of two things happens. Either the accused gets off with no punishment, or he gets too heavy a sentence, usually the former. There are scarcely ever enough scout officers available for a general court-martial, hence the scout soldier seldom comes up before his own officers for serious offenses. In order to properly mete out justice to the native soldier, an intimate knowledge of his character must be known both as an offender and as a witness. This knowledge can only be acquired by long experience with scouts and one who has never served as a company officer in a scout organization cannot acquire it.

The limits of punishment as prescribed in the court-martial manual are not as a whole applicable to scout soldiers, cut in half as they are in his case. Company officers find that for this reason the summary court is not very effective. The punishments referred to were prepared for an entirely different class of men.

Practically every scout officer I have consulted is in favor of doing away with the general court for scouts, and retaining the summary court with a considerable latitude as to punishment. To take the place of the general court let a court be authorized consisting of three officers, the commanding officer to be president in case this seems advisable and he has not previously investigated the case or preferred the charges, and let this court be authorized to punish at their own discretion, awarding punishment commensurate with the offense and the native character. Let this court be without record further than finding and sentence. No injustice will result from a court with such powers and better results will be obtained.

In place of the summary court several officers have suggested that the commanding officer hear all cases and award punishments now ordinarily referred to the summary court. I see no reason why this should not be a good plan.

Thoughtful scout officers who have been handling these men for some years do not make statements on vital points such as this without reason. Their opinions are the result of absolutely practical experience and are not theories. The average scout officer does not belong to the theorist class. Their ideas therefore should be given the greatest consideration.

Reprints and Translations.

NOTES ON THE COMPOSITION OF THE CAVALRY REGIMENT.*

By MARZIALE BIANCHI D'ADDA, Colonel, Retired, Italian Army.

The subject is trite, has been worn threadbare, has for many years been an object of discussion, but for one reason or another no modification has ever been brought to the composition of our Cavalry regiment. It is well, however, to remember that up to the present time the formation for the regiment of five rather than six troops has been a subject of discussion, of argument; on the other hand, now that the debated question is brought again to the front and there seems no doubt that a decision will be reached concerning it, there have sprung up supporters of the regiment of four troops and even some who believe in small troops.

The question, though old, belongs to the present time. We consider it opportune therefore, to call attention to it—not that of the older men of the arm who know more about it than we do, but rather of the younger officers—to the direction in which it is moving, to the importance of the problem, and to the different solutions it may have.

Meanwhile let us set down first and above all the ideas in accordance with which we shall shape our reasoning, our argument; headings that are not the usual expressions made to fit expectations but rather principles, unassailable axioms, admitted by all to be so. These are:

*Translated from Rivista di Cavalleria of June, 1906, by Major [illegible] Reynolds Landis, Sixth Cavalry.

1. The employment of the arm in war determines its organization, its instruction.

2. To carry out its varied and important duties, Cavalry must be united in large units (masses).

3. The organization of Cavalry is most closely connected with its being put on a war footing; because young horses and those that have just been bought or requisitioned cannot, should not be used to bring Cavalry troops to a war footing.

4. Cavalry today which is not in every way the best is not worth the expense incurred.

A REGIMENT OF SIX TROOPS TO BE PUT ON A WAR FOOTING WITH SIX TROOPS.

This is the organization in force in Italy, in Austria-Hungary (even in the regiments of the "Landwehr") and in Russia. The sole but serious fault which emanates from it, and which up to a certain point seems warranted, is that the regiment is too heavy and therefore difficult to command and maneuver in operations. On the other hand it presents the appreciable advantage of economy and it is exactly for this reason that it has been maintained up to the present time in Italy. It was maintained for many years in Austria-Hungary without thought of modifying it and it was adopted in Russia a few years ago when, wishing to increase the Cavalry considerably, they preferred, rather than make new regiments, to bring the regiments, which were all of four troops, up to six troops.

It must be said, however, that while the Italian troop has the weakest organization, considered with respect to those of the foreign Cavalries, it is only in Italy that the regiment of six troops is considered of enormous heaviness. This results, according to our opinion, from two facts: First, that the greater part of our drill grounds are not so large as to permit commanders in regiments, field officers and captains to acquire the necessary practice in the evolutions of the regiment, so that they are somewhat at a disadvantage when they are called upon to maneuver in larger fields; second, that really on most of our grounds there is so much cover that considerable difficulty is encountered in directing and maneuvering six troops properly. But even such

difficulties do not seem to us insuperable when we might maneuver often over the open fields; they would, on the other hand, probably be almost insurmountable to the Cavalry of an adversary and that would constitute a great advantage for us.

We should, however, be perfectly satisfied if, on account of the most important question of putting it on a war footing, there should be adopted for the regiment another more suitable formation.

We held to the correct idea (it was forced upon Italy in a very special way through the almost absolute lack of saddle horses fit for service) of making a single assignment,* in order to insure the troops being readily put on a war footing with the personnel and the horses already in the ranks. We have, that is in peace—according to our organization—a greater number of men and horses than is needed for a war footing, so that we may be able to send to the depot for this or that reason those not fit to take the field at once.

We solve thus, in the most practical manner feasible, the difficult question but escaping Scylla we fell into Charybdis. We avoided the first obstacle but we did not escape the second and we formed a troop for war service with 120 mounted men and therefore too weak to confront those of 150 mounted men of the other European Cavalries.

We do not delude ourselves that by increasing the peace organization it will be possible to remove the inconvenience we have complained of, as we shall see better later on.

It is to be noted that we are favorable to a more suitable formation of the regiment but on the sole and single condition that it shall not be diminished even by a single one of its troops on a war footing; now too few in number.

A REGIMENT OF FIVE TROOPS TO BE PUT ON A WAR FOOTING WITH FOUR TROOPS.

It is the ideal formation, which is in force in Germany and in France, except that in Germany the troops all have the same strength and receive the same instruction. It is only after an

*That is of having the same number of troops in a regiment on a peace and on a war footing.

order places them on a war footing that lots are drawn to determine the troop which is to become the depot troop, which is to furnish to the other four troops the men and horses that they need to place them on a war footing, and which will receive from these latter the men and horses that are not fit for service. In France, on the other hand, the fifth troop has in peace the functions of a depot troop, and this difference is so decided that it no longer permits any comparison between the French and the German organization. The German, as we said above, comes up fully to the ideal; the French having come to an agreement upon the vital point of this organization adopted it only in name, on paper; in fact, the French regiment is made up of four troops both in peace and in war.

Certainly in France they need take advantage of the great wealth of horses which they have at their disposition and have taken steps accordingly; but if we admit that such a system might be worth something in France, we could by no means admit that it would be so in Italy.

The German troop—and it is important to notice this—is absolutely certain to put a hundred and fifty mounted men on a war footing. We do not think that the same could be said of the French troop. Germany is also well off for horses and certainly would not deprive herself of one hundred troops, the expense of which she bears in time of peace, if she were not fully convinced—after experiments made in 1870—of the necessity for the disposition she has adopted for placing her Cavalry on a war footing and of the excellence of it.

A REGIMENT OF FIVE TROOPS TO BE PUT ON A WAR FOOTING WITH FIVE TROOPS.

In no great army does this formation of a Cavalry regiment exist and it is the one now proposed for our regiments.

We can at least notice the following respecting it:

Compared with the six-troop regiment the difference is too slight—one troop only—to remedy the deplorable heaviness of the regiment and its lack of maneuvering capability.

In order to put ourselves on a war footing it causes us to keep up the present system which is the best—provided troops

have always the number of horses prescribed by the peace footing—but which carries with it the irremediable defect of producing troops that are too small.

It does not exclude the probability that, urged to it by necessity, we shall have to have recourse to the expedient—as was done in 1866 when all the sixth troops were broken up—of breaking up the fifth troop to reinforce the others, diminishing in this way, and markedly, the number of troops to be put in the field.

From this therefore there is no escape; either we go into the campaign with small troops, a defect which it seems now they intend to remedy; or we finish by adopting the German system of putting four troops on a war footing, with the enforced consequence of reducing the strength of our Cavalry which we repeat—and we shall never tire of repeating it—is already so little.

But objection may be made that there is no real intention of bringing the strength of the troop on a war footing up to 150 mounted men; that it is the intention to bring them up only to 130. Consequently there is nothing to prevent keeping up the present system, we will need only to increase the number of horses on the peace footing. The reasoning apparently is perfectly good but you forget that the peace footing of the troop—both for men and horses—must be kept within suitable limits because if you go beyond them you seriously endanger the instruction of the one, and the training of the other.

To be perfectly sure of putting a troop on a war footing with 130 mounted men it would be indispensable to have its total on a peace footing 160 horses and 175 men and that notwithstanding the fact that you would always be obliged to count upon young remount horses of the preceding year. We will not enter into particulars; it is sufficient to remember that with the officers of our troops, with the limited means for instruction in our barracks and drill grounds, with the numerous garrisons in upper Italy where usually, in the cold months of winter, imparting instruction constitutes one of the most serious problems to be solved, we would cause to spring up a very difficult situation. It is perfectly well understood that we start with the supposition that for the Cavalry the three years term of service is retained; that if, on the other hand, even for it the two years terms were adopted—unless large sums were granted for increasing the pay of non-commissioned officers and old soldiers—in a few years there would be no occasion to talk about Cavalry; it would of itself have disappeared

The conclusion to which we cannot help being brought is evident. With a regiment formed in peace of five troops if it is put on a war footing of four these will be sufficiently strong; on the other hand, if we wish to put all five troops on a war footing they will, of necessity, be very weak.

A REGIMENT OF FOUR TROOPS TO BE PUT ON A WAR FOOTING WITH FOUR TROOPS.

We shall not go into details about this formation which would be the most unfavorable one for the arm. We shall have to repeat what we have said above respecting the regiment of five troops put on a war footing with five troops but increasing the dose because there would be excluded any possibility whatever of selecting one troop to reinforce the others; an expedient which in the worse suppositions the regiment of five troops could at least have recourse to. We firmly believe that there are no supporters for the regiment of three troops; of a regiment, that is having a less strength than half an Austrian regiment.

Let us go on to another important question, to that of small troops. Some writers would not only be pleased to take into the field small troops but bring forward history in support of their opinion. The troops of the Napoleonic Cavalry, they assert, were always weak and, in spite of that, they did what they did.

We do not contest in the least the truth of this assertion but that proves nothing if not what follows: that Napoleon found great difficulties in giving to his Cavalry the numerical strength *which it was his intention that it should have*, since Napoleon, thoroughly cognisant of the enormous losses that Cavalry suffers in war when it is carrying out its many duties as he maintained they should be carried out, would have wished troops of the greatest strength possible.

In his correspondence there are hundreds of letters and orders respecting the organization of cavalry and a great many

also concerning the number of horses in a regiment and in a troop, and the ideas of the great captain upon this subject. We shall not delay by repeating or summing up many of these letters; the two following, which seem to us exhaustive, will be sufficient. On the 21st of November, 1806, Napoleon was writing from Berlin to General Dejean, Minister of War: "Even if the troops had 200 horses in them we should never have too much Cavalry and the regiments would never be strong enough." (Letter 11291.)

The 8th of January, 1807, from Varsovie he wrote another letter (11585) to the same General Dejean in which he spoke only of Cavalry, of providing it with men and horses. "My intention," he writes, "is to have in the month of May, 80,000 horses," but he does not wish new organizations created; instead they were to enlarge regiments, bringing them up to 1,000 horses. The troops of heavy Cavalry, fixed at 180 men, were to be brought up to 220. "The troops of light Cavalry even, are now ridiculous; there are not 100 men present under arms in line. Should they be brought up, through organization, to 300 or 350, there would not be the least trouble in maneuvering them." Then he adds: "It is absolutely forbidden above all things to buy horses less than five years of age."

Note carefully that in the same letter he also says: "It is my intention to have as many horses as I can get men," and we reproduce these words in order that opponents may not state that Napoleon was talking of men and not of horses. Mentioning the men, the great captain distinctly refers to horses, it was therefore *his intention* to have troops of heavy Cavalry of a strength of 220 men and 220 horses, and that of light Cavalry even from 300 to 350. The fact is, however, that in a general way, the Napoleonic troops of Cavalry were really small. We have here under our eyes the *general situation* of the *Grand Army* for the campaign of 1805, undated; that for the campaign of 1807 dated April 1st, 1807; and, finally, another relative to the war of 1809 dated July 1st, 1809. From the first and the last of these situations we find that there are not two regiments which have the same strength; their strength, however, is always very small. With a few exceptions—especially in the Cavalry of the Imperial Guard—troops appear to have a strength of a little more than 100 men and sometimes even less; troops really *ridiculous*, as Napoleon says. On the other hand, in the situation dated April 1st, 1807, probably as a consequence of the above mentioned letter of the 8th of January, 1807, and above all, we believe, on account of the many horses of the Prussian army which after Jena fell into the hands of the French, things appeared much better: troops have a strength which varies between 130 and 150 men; some even (besides those of the Polish regiments and those of the Spanish division) have a total that is over 200 men.

We are not opposed to small troops. They are suitable to modern tactics which, for Cavalry, requires an agility and a quickness of maneuver much greater than that of the Napoleonic era. In this case, however, we must absolutely be able to fill up at once the numerous gaps which war produces in the ranks of the Cavalry.

The Emperor Napoleon could rely upon the equine resources of half of Europe, which was under his orders, and likewise upon abundant spoils obtained from the enemy.

Notwithstanding this, his solicitude was infinite and the positive orders emanating from him went into minute details respecting the gathering of great quantities of horses in depots which be established for them in the rear of the army in the field. Today, even in this respect, things are very much changed; each state must count upon its own equine resources, and these, in Italy, as is well known, are very few. It is therefore of the greatest importance for us to go into a campaign with troops as strong as possible: in the first place to confront in almost equal conditions the large troops of the enemy; secondly, so that the troops as a result of the great, inevitable losses that will take place in the first days of the campaign may continue to be troops and may not become skeleton units no longer fit for efficacious service.

Up to this point we have concerned ourselves with the important question of the composition of the regiment and of the troop only so far as relates to the putting of these units on a war footing, mentioning only casually the other side of the

problem, that of instruction; and it is not our intention even now to linger over it.

From our regulations there has already been cut out, as far as possible, everything that finds no application in war but the regulations require that men and horses shall be, as accurately as possible, instructed and trained so that they may be prepared to carry on the varied and numerous duties expected of them in the campaign. The service of patrols, of reconnaissance, combats (from those of small parties up to those of large bodies of Cavalry), on foot and on horseback, are not possible if the troops—officers and men—are not perfectly instructed and the horses thoroughly trained and in condition.

It is on account of this indispensable necessity for instruction that we said above that the strength of the troop could not exceed certain limits or it would not be in condition to impart the prescribed instruction to an inordinate number of recruits and young horses, and to complete at the same time that of the older men and of the remounts of the preceding year.

We do not add anything else because we are writing for Cavalry officers who know about these things as well as we do. We cannot, however, do less than make the remarks:

(a) That there would be no supporters of the two-year term of service even for Cavalry if those called upon to decide the important question had commanded a troop, even though for a very short time.

(b) That it is high time to provide a remedy for the inconveniences springing from the organization of the troop which, while it requires a division into four platoons, provides only three subaltern officers.

We understand and duly appreciate that certain conditions respecting promotion are at the bottom of that restriction but the lamented inconvenience could easily be overcome by entrusting permanently the command of one platoon to a non-commissioned officer.

We have also said—and we have put it among the several headings—that the employment of Cavalry in war requires that it shall be united in large units; an axiom, now, to delay over which, in attempting to demonstrate its truth, would be like wishing to burst in an open door.

Consequently, he who loves the Army and the Cavalry and is keenly concerned in their interest, cannot but rejoice greatly over the projected creation of several divisions of Cavalry. We really would have desired that all our Cavalry should be united in divisions to be attached to armies; assigning to infantry divisions detachments of cyclists to take the place of divisional Cavalry, except that there might be temporarily detached with any Army Corps a Cavalry unit of greater or less strength, of which it had need for the time being. But this question is going beyond our subject and therefore we shall not go any farther into it; it is important for us to call attention only to the necessity for regiments and troops of sufficient strength both on their own account and because they go to make up *really* those large units of the arm of which we have need.

We should like only to have you keep in mind that whoever our opponent may be our Cavalry divisions will find themselves confronted by divisions containing a greater number of men; of the strength of 24 troops of 150 troopers each. Not only therefore will our Cavalry be called upon to take the field with a marked numerical inferiority in respect to the enemy, but even its units—both small and great—will not be of the same power as those of the adversary, to say nothing of the slight probability of being able to fill up the very numerous gaps which the first two weeks of the campaign will produce in the ranks of the horses.

We did not intend to examine the question of the organization of the regiment and of the troop in order to present concrete propositions respecting them. As we clearly set forth in the beginning it was our intention to discuss only the different solutions of the problem and that is what we have tried to do with the greatest possible attention to the ideas, without consideration of their authors or supporters.

For the rest, an appropriate solution of this question would be in no wise difficult if we could spend what was indispensable to it; the difficulties all come from the increase in expense which would be attendant upon it.

A rational organization for the Cavalry is simply, solely, a question of money; and if you are not willing to loosen the purse strings it is wholly useless to think of modifications, of changes.

It is not sufficient to be inclined to spend something more; it is necessary to give the whole amount that is strictly needed.

Therefore, as a conclusion, we permit ourselves only to say, that before changing the present organization of the regiment we must consider well the consequences which will spring from it in placing the division on a war footing and also in settling the composition of the division.

THE SHORTCOMINGS OF THE RUSSIAN CAVALRY ON THE YALU IN THE SPRING OF 1904.*

By BARON V. ESEBEK, Captain Austrian Cavalry—Ninth Uhlan Regiment.

*(Translated from the Austrian Cavalry Journal, April, 1910, by H. B. M.S.E., Army Service Schools.)

Appearances are against us! The large "manoeuvres du centre" in France show that Army B, which was much the weakest in cavalry (General Millet had but two corps cavalry brigades), prevented the two independent cavalry divisions and the two corps cavalry brigades under General Tremenau from gaining an insight behind the line. This fact, which of course is not very flattering to our arm, causes "La France Militaire" to point to the analogy of this to the situation on the Yalu in May, 1904. As such a comparison may easily cause the casual reader to conclude that today cavalry is unable, with the means at hand, to pierce the hostile infantry screen, I may be allowed to discuss anew this epoch of that campaign—so often written about—which diminished, for the first time, the luster of the Russian cossacks and which, in the opinion of many, threw a cloud on the future of our arm.

What splendid opportunities offered themselves to an energetic cavalry leader during the Japanese advance! That not a single raid or coup was undertaken, nor even attempted, by Mischtschenko's 11 cossack squadrons against the bridges which the Japanese of necessity had to throw, against the widely separated magazines, against the supply depots, is the more inexplicable when it is considered that Kuroki's nine squadrons were widely dispersed and bound down by special duties. But we should also not forget that the Russian cavalry was hastily organized into larger units and consisted in the main of *reserves* and we should not regard it as a model for modern cavalry.

The eastern detachment of the Manchurian Army on the Yalu had at its disposal more than 22 sotnias, equally divided on both wings. Of those on the right wing General Mischtschenko had already, on February 17, crossed the river with the Transbaikal cossack brigade in order to reconnoiter towards Antung. The battery attached to his command could not keep up, on account of the bad roads, and had to be sent back to the north bank. Kasan was reached by patrols on February 24 and on the 27th touch was gained with the Japanese advanced troops. On February 28th an engagement ensued, lasting an hour and a half, between six *dismounted* sotnias and four dismounted Japanese squadrons, which the Russians broke off on the approach of the Japanese infantry. Without at all being forced thereto, Mischtschenko thereupon retreated and voluntarily abandoned the south bank of the river on April 3. It is undoubtedly true that the intention of the Russian general headquarters to engage only in a delaying action on the Yalu and Kuropatkin's anxiety about his line of retreat, which cropped out in all of his orders, had a great influence on Mischtschenko's action; but neither one nor the other ought to have influenced him sufficiently to forget his duties as a cavalry leader and to abandon the touch he had gained with the opponent. On April 2 the first hostile patrols reached the Yalu; on the 4th—that is one day after the Russian cavalry brigade had crossed back over the river—the Japanese advance guard cavalry appeared there; on the 8th, the advanced infantry troops, and on the 14th, notwithstanding the unusual high water, the entire Twelfth Division was concentrated there. Of all these events the Russians received information only through Korean spies; for after the Russian cavalry had retreated and taken up

its bridges the obstacle in front of the Russian position became of great advantage to the Japanese; the Yalu becoming a mask for the Japanese, so to speak. With the Japanese concentration south of the Yalu once completed, the Russian near reconnaissance naturally had to come to an end. Reconnoitering detachments sent thereafter across the river encountered the enemy everywhere. The entire Russian cavalry should have tried its very best then, without regard to its own lines of retreat, to get around the flank of the opponent and operate against his communications to the rear. Even if in doing this it would have lost some of its fighting power, the results achieved would have been of far more value than the mere defensive observation with which Mischtschenko's brigade had to content itself behind the river. The excuse has been made that Mischtschenko's squadrons found no important cavalry opponent, but only infantry, and that the terrain precluded movements of cavalry—even that of single troopers—off the mountain roads. I believe the true reason is a different one: In the work of a high ranking Russian cavalry officer concerning the employment of cavalry in this war I found an explanation as follows: "On account of the very inferior horses, which are small and better suited to draft than cavalry horses, the Transbaikal cossacks ought to be called *mounted infantry* pure and simple." Cavalry which regards its most noble arm as a mere means to carry its fire power to the vicinity of the enemy, which does not regard the horse as its *main arm*, may possibly be able to perform good service in a defensive screen, but will never be the *eye* of the army. It appears strange that in the very few encounters between the opposing reconnoitering parties, both parties dismounted as a rule and resorted to the carbine.

It would, however, be wrong if we would look on this as a maxim for our future conduct; the character of the Korean mountain country precluded enveloping movements; but in open terrain the cavalryman who dismounts to fight on foot gives all advantage to a quick and energetic mounted opponent. As many of our officers are inclined to believe that in times to come we will be but mounted infantry, basing their belief on experiences in Eastern Asia, it seems to me of value to explicitly

point out that the Russian near reconnaissance from the Yalu position was invariably a failure, in spite of the fact that a mounted detachment of 140 rifles was attached to each Siberian rifle regiment. This gave for tactical reconnaissance eight such commands which ought to have been sufficient to perform all the tasks of divisional cavalry had they not lacked the essentials of cavalrymen. The well mounted, well drilled cavalryman will always and at all times be the best organ for reconnaissance, as is proved by the failure of the Russian reserves and cossacks, and is further proved by the work of the mounted rifle detachments—but give these same cavalrymen blooded horses, drill and educate them properly and inspire them with confidence in the superiority of lance and saber, and see the difference.

That the mounted rifles and reserve cossacks were very deficient in the essentials of good cavalrymen can be seen in more than one of Kuropatkin's orders by reading between the lines. In a telegram sent to the commander of the East Detachment, for instance, Kuropatkin says, "The passive observation may lead to disastrous catastrophies." Considering events on the Yalu we may say that the value to the defender of an obstacle in front is very questionable when the obstacle serves only to interrupt contact with the enemy and screens the latter's intentions.

After the middle of April there was a Russian reconnoitering detachment on the left bank of the Yalu and on May 1 it had reached Antju, being consequently lost to the army for reconnaissance during the battle on the Yalu. This was a flying column formed of 1 squadron and 2 mounted rifle detachments, under Lieutenant-Colonel Madritow, which had crossed the Yalu on the 15th of April on boats and had sent out patrols from Tschosau. It is true that these patrols gained touch with Kuroki's right wing, but were unable to learn anything of value; all their reports being based on information received from Chinese spies. When Colonel Madritow saw himself endangered on the 26th by the Japanese advance he abandoned his very favorable post; instead of debouching to the northeast and so remaining on the hostile flank he went south around the Japanese right wing to operate against the hostile line of com-

munications. Thereby his detachment voluntarily abandoned the exceedingly important observation of the flank and could find out nothing concerning the Japanese preparations for crossing the river and the measures taken for the advance stages of the battle on May 1st.

The Russian cavalry of the left wing—2 regiments under Colonel Truchin—had received orders from the commander-in-chief to send patrols across the Yalu and take up connection with Colonel Madritow's patrols. This was done on April 25. On April 24 Colonel Truchin reported that hostile detachments had crossed the river at different points without his patrols being able to ascertain their strength, or even the branch of the service they belonged to. Colonel Truchin had orders to fall back if stronger detachments crossed the river to cover the route of retreat Kuan-Diansan. In place of doing so he fell back on the 28th on the left wing of the Russian Army, so that the line of retreat mentioned was entirely unprotected. When the cavalry advanced towards that line the next day it reported that the enemy was already entrenching in the mountains of Husan between the Yalu and the Liho and it was also seen that mountain artillery had been placed in position on the north bank of the Yalu. In spite of this Lieutenant-General Sassulitsch, commanding the Eastern Detachment, was still of the opinion on the morning of May 1st that the main Japanese attack was to be looked for from the south—from Witju—and it should certainly have been expected of the cavalry of the left wing to perceive and report in time the enveloping movement of the 12th Japanese Division. The report sent by the East Detachment to General Headquarters on April 30, full of uncertainty of the situation, was judged in no unmistakable terms by Kuropatkin. His reply to General Sassulitsch is given verbatim here on account of the lessons it contains: "The main requirement for the success of our operations is exact ascertainment of the enemy's strength and position. From reports received so far I do not see that the observation duty is being properly carried out—a duty which should not cease day or night, to ascertain movements of and measures taken by the enemy. Certain definite points should be selected for observation and assigned

to specially suitable officers. Close touch with the enemy is of paramount importance. According to your report Colonel Truchin's two cavalry regiments are performing but little in this direction. Transmit this opinion of mine to both cavalry regimental commanders. I further want you to have full knowledge of everything happening at the different—necessarily separated—parts of the Eastern Detachment, and to see that connection is kept up between them. In the case of Colonel Truchin I miss the endeavor and ability to keep up this connection."

The failure of the Russian reconnaissance and the scant reports sent in by the cossack patrols teach us to attach the highest value to the education of our mounted messengers and patrol leaders; we see here that the inborn abilities of the cossack which serve him well as horseman and rifleman, are offset by his lack of intelligence and we see also that no matter how good the natural material is, it will be found wanting in tasks set in war unless properly trained and improved in time of peace.

On April 24 the technical preparations for forcing the Yalu crossing had been finished. On the 25th Japanese torpedo boats and gunboats had entered the mouth of the Yalu, silenced the batteries on the north bank there and facilitated the entrance of vessels loaded with bridging material. During the night of April 25 and 26 infantry crossed on pontoons to the islands, in which operation, on the Kurito Island, a Russian mounted rifle detachment was surprised and lost all of its horses. On the morning of the 26th Kuroki's army was separated from the Russian position only by the western arm of the Yalu, but withal the Russian headquarters was still in ignorance of the enemy's intentions and disposition of forces, although the latter had already commenced to throw bridges at Witju. On the evening of the 27th General Sassulitsch still believed that but small hostile observation detachments had crossed the Yalu. A reconnaissance of the terrain between the Yalu and Eiho was set for the night of April 27 and 28; this terrain was in the hands of the Japanese advanced troops on the 28th. To ascertain how far these had advanced on the right bank a high ranking general staff officer was sent with one battalion, two mounted rifle detachments and two guns into the hills of Husan across the Eiho.

This detachment drove back an outpost company of the Japanese Guard division and succeeded—though fired on by a battery which had gone into position north of Witju—in intrenching itself on the Tiger hill and holding its position there until the morning of the 30th. A second reconnaissance sent out the same day, of one battalion and two guns, was resultless for Russian headquarters was still in ignorance of the enveloping movement commenced by the Japanese 12th Division. To keep this movement concealed as long as possible the Japanese batteries accompanying the 12th Division, which made excellent utilization of artificial cover, did not open fire until the Russian batteries had betrayed their position. They opened fire about 10 a. m., April 30, and within an hour and a half the Russian batteries were silenced and the Japanese batteries kept the Russian position under fire until 5 p. m. Now General Sassulitsch could no longer be in doubt that Kuroki was doing more than a simple demonstration. During the night of April 30 to May 1 it had been ascertained that the Japanese Guard Division and the Second Division were crossing the river and this fact was reported to the commander of the Eastern Detachment. There could now be no doubt but what a general attack would take place on May 1st. We need not go extensively into the course of that battle, in which the cavalry on both sides played but waiting roles, it has been portrayed by more fluent writers than myself.

Kuroki had ordered the attack to start at 8 a. m.; shortly after 9 a. m. the Russian position was in the hands of the Japanese; the defenders evacuated the position when the Japanese got to within 400 meters of it; only at a very few places did the bayonet come into use. The artillery of the Japanese Guard Division immediately unlimbered in the position evacuated by the Russians. During the retreat the lack of connection and communication in the Russian position was fatal—the separate defensive groups retiring without mutual support. In this manner a battery of the left wing, retreating without infantry protection, came under Japanese infantry fire at 600 yards range and lost all of its horses and guns; another battery became stuck in a narrow defile and fell into the enemy's hands—clear proof that there had been no reconnaissance in rear of the position.

Separate Russian battalions, seeking a defensive position without any connection with other troops, saw themselves continually outflanked by the Japanese infantry. This then was the time for the cavalry to save their honor, if it could not save the fate of the day. But the 22 sotnias of the Eastern Division were 80 kilometers away from the battlefield. Only late in the afternoon was Mischtschenko's brigade called up from Dagushan to Piamyn. Granted that the terrain, and possibly also, that the character of the Transbaikal cossacks did not allow proper and correct utilization of the cavalry on the battlefield, the *carbines* of these 22 sotnias, if concentrated in *one* position, could have developed a fire power sufficient to protect the retreat and materially lessened the losses of the exhausted battalions which had fired away their ammunition. Placing the cossack brigade behind the *right* wing caused the premature retreat of that brigade behind the stream, for the *wrong* disposition of this force was the result of inefficient and incomplete reconnaissance.

The catastrophe would have been complete, had the Japanese not stayed in the captured position with their Second and Guard Divisions until 1 p. m.; the 12th Division only remained at the heels of the retreating Russian left wing and struck its line of retreat in the flank.

Only at 1 p. m. the Second and Guard Divisions took up the pursuit. About 3 p. m. they encountered serious resistance at Harmattan, where the 11th Rifle Regiment had taken up a position. Towards 5 p. m. the remnants of the Siberian battalions reached the line of communications where the rear guard was taken over by the 10th Rifle Regiment which had been called up from Antung. After dark a rest was had for two hours and then the march continued unmolested to Foenhuantschan.

Although the Russian cossacks were far away, the 9th Japanese squadron did nothing to molest the retreat of the demoralized Russian infantry. This shows clearly that the Japanese cavalry was nothing more than mounted infantry. What a pity that an arm of such high moral quality was deficient in the best of all soldierly virtues, namely the ardent desire to take the offensive and the love of the saber! However, we ought not to

blame the Japanese cavalry too much, for their horses were entirely too small and weak. Only on May 3 the Japanese cavalry of the 1st Army advanced on Piamyn, the main body of the army, which had spent the night of May 1 to 2 on the battlefield, followed its cavalry on May 4. By that time the Russian Eastern Detachment had the mountain passes on the road to Liaoyang in its rear and was in safety. By May 11 the First Japanese Army was concentrated at Foenhuantschan and remained there till June 23.

So much for history. Now a few words concerning our personal views: If we, on account of our military education and the achievements of our sires, feel justified in criticising an unfortunate army, we should not do so without giving that unfortunate army full credit for fulfilling its duty and willingness to sacrifice itself. Both these attributes were inherent to the Russian *soldier* beyond the shadow of doubt. We can be honestly jealous of those who had a chance to receive the reward of their peace training in front of the enemy. It is true, there is no reason for our being pessimistic; that our "Africans" have lately proved to the world. However, the events of a century ago, which the year 1907 brought to our remembrance, caution us not to throw aside in disdain the catastrophies of the Manchurian army, but to draw therefrom lessons applicable to our situation.

The battle on the Yalu which was the overture in the East Asiatic drama, already showed the line of action ever recurring in the course of the campaign—the defensive. The disadvantage of that—when opposed to an energetic attacker—increased on the Yalu by the Russian reconnaissance cavalry recrossing the stream prematurely and leaving the commander-in-chief in the dark as to the measures taken by the attacker. This led to a wrong disposition of his forces behind the defensive sector, which became disastrous in the absence of all connection within the position. To justify the cavalry to some extent we will state that General Sassulitsch's orders from general headquarters were "not to engage in an unequal battle if ever possible, but to hold the position." Had Mischtschenko's cavalry remained far to the front to the last minute, it undoubtedly would have succeeded in learning the enemy's dispositions; and General Sassulitsch thereby might have been able to either evacuate the position in good time and in good order or to call up sufficient additional troops to hold it. Madritow's detachment, which was the only body of troops on the left bank of the Yalu when the Japanese advance troops arrived there, was too weak to assure support to its patrols and was forced to retire.

It is possible, and very probable, that a future European war will assume the shape of *position battles*. If so, the possibility decreases for our arm to interfere frontally. With the concentration of enormous armies behind a fortified position, however, critical moments will become more numerous, caused by difficulty of replenishment of ammunition, bringing up supplies, etc. And there then lies the field of activity for strong bodies of cavalry—divisions and corps—to cut the extensive hostile communications to the rear, the most vital spot of a modern army.

One thing we must not forget: Neither on the Yalu nor later in the course of the Russo-Japanese War has either cavalry entered the original domain of cavalry, the pursuit! The Russians had no opportunity for that, the Japanese lacked the material, for this requires a cavalry which not only can shoot well, but which also can ride and fight well.

How clearly the Japanese perceived the truth of this is established by the fact that the Japanese government did send, during the war, a high official to Europe to study the remount system there and commenced, immediately after the war, to increase their cavalry by eight regiments. Therefore we should not allow the apparent negative lessons of the East Asiatic campaign to rob us of our faith in our arm nor to abridge the fundamental rule of our noble arm: "Only a cavalry which is self-confident will achieve great things."

ORGANIZATION OF THE CAVALRY IN ARMIES.*

By Lieutenant General P. HERSHELMAN, Russian Cavalry.

In the question of organization, one of the basic principles is that all modifications or improvisations should be avoided as tending to create disorder and to destroy the link between parts of the same unit.

All mixed companies, parties and detachments, formed from parts of regiments, brigades, etc., should be prohibited.

This is a universal truth which has been recognized by all great generals and military chiefs, but it seems that it is always necessary to call attention to it. During a war there are two phases of cavalry activity, viz., strategic activity and tactical activity.

The first comprises any independent action of cavalry detachments, operating at a considerable distance in front of an army, on its flanks, in rear of the enemy's troops or in rear of its own army for its protection. The second or tactical phase comprises the cavalry work on the battlefield, the service of protection near army corps (during marches and rests, scouting, protection of lines of communication, the service of providing connection between bodies of troops at a distance from each other), etc. The latter kind of service requires the constant presence of a certain amount of cavalry near an army, during fights as well as during marches and halts.

On the other hand the strategic activity of the cavalry sometimes makes it necessary to send far away large cavalry masses which must remain away for long periods of time and be cut off from any connection at all with the bulk of the army.

These tasks are often of great importance and require independent action.

We thus see that in order not to deprive the infantry, at the moment of a fight, of the assistance and protection of its cavalry,

*Translated from the "Voenny Sbornik," No. 4, 1905, in the office of the Military Attache at St. Petersburg for the Second Section, General Staff, U. S. A.

the latter must abstain from risky independent action. Still the strategic cavalry work has to be done and so for this purpose it is better to have cavalry which does not have any joint work with the infantry.

Therefore, in addition to cavalry regiments attached to and a part of army corps, it is necessary to have independent cavalry detachments, large enough to do independent work from the beginning of military operations. This can have a decisive influence on the march of events.

During the wars of the last century the importance of the strategic cavalry service was proved in many instances in a striking manner.

In our days the conditions are greatly modified principally by reason of the increased ranges of rifle and artillery fire. The importance of cavalry has not diminished but on the contrary it has gained in value not only on the battlefield but in the whole theater of military operations. Especially is this true of scouting work, the protection of its own troops, attacks on the flanks and rear of the enemy, etc. Regular actions during fights, as for instance frontal attacks in mass, are impossible now, but the battle or tactical activity of the cavalry has taken other forms which are of enormous importance in view of the increased size of modern battlefields and the areas occupied by the camps of modern armies.

The tactical activity of the cavalry has thus grown to be more independent in character and the organization of cavalry troops must correspond to this new condition.

It must be double, *i. e.*, the cavalry must be divided into army corps (divisional) troops and large independent units, the latter being under the immediate control of the commander-in-chief.

Facts have proved that the unsuccessful operations of cavalry in the Franco-Prussian, Russo-Turkish and the last Russo-Japanese wars were due in a large measure to this lack of organization.

Our cavalry, in time of peace, is distributed among army corps and is not destined for independent strategic action. At the outbreak of the war we had for service, it is true, especially formed cossack regiments of the second reserves (called only

when mobilization is ordered) but they were not fit for independent strategic action. They had been included in the organization of army corps and we had to form cavalry detachments from regiments in the theater of military operations. This hasty work was too late and when it was most needed we had no cavalry detachments fit for combined and coördinated action, able to be sent ahead at a moment's notice, and equipped and supplied for the work expected of them.

The inconvenience of not having independent cavalry detachments at our disposal, was bitterly felt during the Turkish war, both at the crossing of the Danube and later near Plevna. In spite of the heroic efforts of the mixed cavalry they could not accomplish half of the strategic task expected of them although they were highly qualified.

Napoleon, whose genius as an organizer remains unchallenged, had two types of cavalry. Two to four regiments were attached to and made a part of each army corps and in addition there were separate cavalry corps.

This organization enabled him to make great use of his cavalry in the theater of war as well as on the battlefield, giving as it did independent tactical units which could (and did) obtain great success and achieve brilliant deeds. He could send, at a moment's notice, large cavalry masses ahead of the army or when necessary could concentrate cavalry on some feeble point without depriving the army corps of their useful auxiliaries.

The American war also proved the value of such an organization of the cavalry, and we again find instances of successful operations, having great strategic importance, by large independent cavalry units. During the Franco-Prussian war the action of independent cavalry corps contributed greatly to the success of the Sedan maneuver.

All these examples prove how wrong the persons were, who about the middle of the last century preached other principles of organization for our cavalry. Their system caused the astonishing failures made by our cavalry in our two following wars.

The question of the tactical importance of cavalry in modern war has been debated so often that there is no need of repeating all the arguments in favor of these troops. The fact that the

importance of cavalry on the battlefield has not at all diminished but has been modified and grown to be more complicated is concurred in by all impartial and unprejudiced authorities. Only a false conception of the importance of cavalry on the battlefield could produce such things as happened during the operations before Plevna and in the battle of Mukden.

At Plevna, a cavalry mass posted in the rear (August 27th to 31st) remained inactive and made not the slightest attempt to support the infantry by a timely attack or even a demonstration to attract part of the enemy's troops away from the most important points, while in the battle of Mukden, a mass of cavalry concentrated on the right flank, instead of supporting the infantry action or making a diversion in the rear to impede the outflanking movement of the Japanese, was, through negligence or lack of perception, dispersed here and there in small detachments and when most needed left the battlefield and did nothing. The necessity for having a permanent organization of what might be called army cavalry, being reorganized, it is only necessary to determine the details.

My opinion is that cavalry corps should be formed because such an organization would give numerically strong units which do not vary in constitution and which would be very useful in the interests of the good training of all the cavalry.

Besides, this system would give to the more talented commanders a chance to distinguish themselves in peace time, from the common mass of officers and to appear in time of war as the leaders of the troops they have been commanding in time of peace.

The units need not be numerically strong; divisions would do. There must, however, be a good inspection organization, for instance chiefs of military circuits with limited staffs.

Such a double organization would be a heavy burden for most armies but not for the Russian army, as it has at its disposal more cavalry than any of the others.

We can easily give to army corps the number of cavalry regiments they need and have besides big permanent independent detachments.

For instance, leaving out of consideration the Caucasia, Turkestan and Siberia, we have in European Russia 89 regiments of regular cavalry and cossacks.

The number of army corps in European Russia is 24. The guard and grenadier corps have three infantry divisions and the others two.

If we give each corps two cavalry regiments it will take 50 regiments leaving 39. These can very well be formed in cavalry divisions (9) or into corps (4).

The remaining three regiments would form in peace time a separate brigade and in war time be attached to the three first class fortresses nearest the frontier.

Upon mobilization the cossack regiments of the second reserves would increase the cavalry of the army corps.

It must be mentioned that, in proportion to our army, our cavalry is insufficient. Four cavalry corps do not correspond to the number of army corps which we can send to the theater of war so it would be desirable to see this force increased in number in order to conform to the requirements of modern strategy.

Cavalry corps should be organized and equipped so as to be best suited for independent action.

They should have horse artillery, rapid fire guns, mountain guns on pack saddles and should have for transportation only pack mules or horses. There should be no carts.

The pack transportation must be fully equipped and organized in time of peace so that there may be not even a day's delay in departure upon receiving the order for mobilization.

A certain amount of bridge material and a unit of mounted pioneers should be attached to these units as they might be very useful in independent action.

Blasting material, implements for railroad destruction and a field telegraph equipment must not be forgotten.

In conclusion I will mention that the opponents of this double system generally use the argument that this organization will create two very different types of cavalry by reason of the different training. This is no serious argument. Cavalry and cavalry work will remain the same, only the regiments will do the work differently in time of war according to their more or less depending upon infantry units. In time of peace, regimental, divisional, and combined army corps maneuvers will contribute to unity of action and ability to execute any kind of work.

THE EVOLUTION OF THE CAVALRY SADDLE.

By Major J. HORTON.

(From the *Cavalry Journal*—British.)

History tells us that at one time Commanding Officers of Cavalry regiments received a money allowance from the State wherewith to supply Saddlery; though there was doubtless some variety of pattern in the equipment thus provided, the system probably worked well enough in peace, but its unsuitability for war caused its general abandonment after the Crimean Campaign, except in the case of the Household Cavalry which continued to purchase its saddlery till 1880.

In 1856 the life of a saddle was fixed at fourteen years; at the present time a well-cared-for saddle will last for ten years.

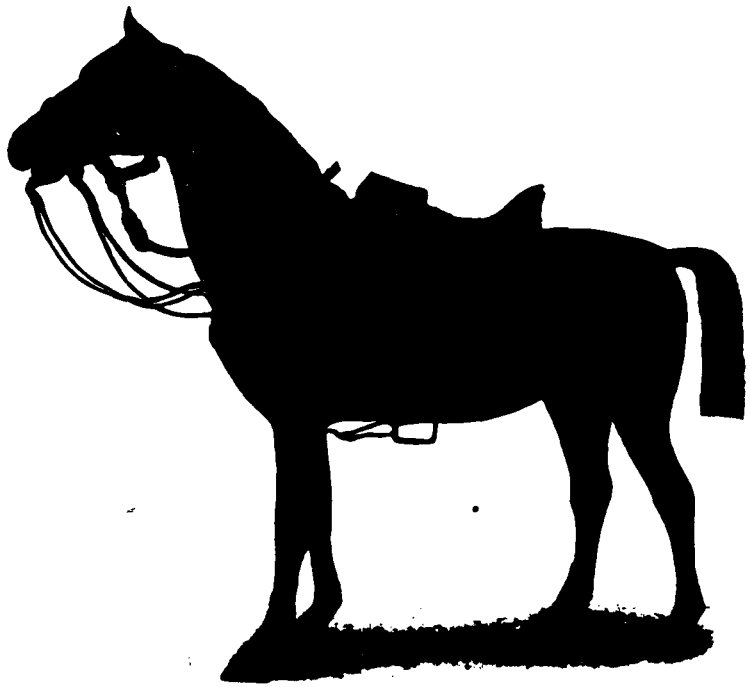
That considerable attention has been paid to this most important part of a Cavalry soldier's equipment, is shown by the many changes of the standard patterns which have been introduced. In contemplating such changes, it is always well to remember that when a new pattern saddle is approved, the existing ones in use (as well as the reserve stocks) have to be retained until worn out, and that the general issue of the improved pattern must therefore be postponed for eight or ten years. For example, the 1890 saddle, the outcome of trials commenced in 1887, was not in general use till 1898, and the old pattern drivers' transport saddle purchased in 1858 could be seen in use until a few years ago.

Perfect agreement, even among experts, is seldom attained, and on the question of military saddles opinions are many and conflicting.

The essentials of a Cavalry saddle are that it must be capable of carrying heavy equipments in addition to the rider's weight, that it must be simple of construction, easily repairable, and capable of adjustment, and that it must retain its serviceability under the roughest conditions of active service, knocking about,

and exposure to bad weather, as well as the constant twists and strains inseparable from riding in the ranks in marching order.

Under such conditions a high class hunting saddle will not last twelve months, and there is no more conclusive testimony to the value of our military pattern than the invariable demands



1899.

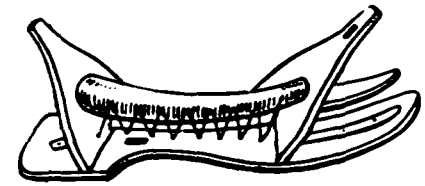
A set of Universal Saddlery with which each Regiment of Cavalry was equipped prior to embarkation for South Africa.

made for it by all classes of mounted troops in the later periods of the South African War.

The following descriptions will show the gradual evolution of our present Cavalry saddle, which as nearly as possible fulfills the essential conditions of the Service:—

(1) SADDLE, WOOD ARCH, PILCH SEAT.

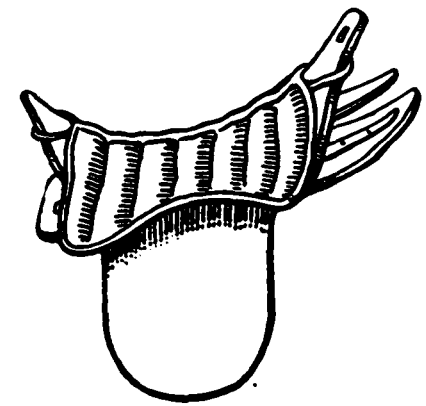
These saddles were in general use in the Cavalry prior to and during the Crimean War and the 11th Hussars retained them until 1866.



TREE.

The arches were of wood, high and sloping outwards, the side bars were narrow and of medium length.

The seat was a loose pilch one, padded and quilted. It was supported by a narrow underseat of raw hide attached to the arches and laced on each side to the bars by raw hide laces.



SADDLE.

The seat was short, nor more than 16½ inches, and with a very low dip in the centre.

The flaps are narrow and of medium length.

A blanket was worn with this saddle up to 1855.

The pannels which then replaced the blanket were thickly stuffed with horsehair and lined with white serge.

The girth was of stout hemp web, permanently fixed to the off-side bar by raw hide laces, and having two leather tabs (girth straps on a broad leather piece) permanently laced to the near-side bar. A breastplate and crupper were employed.

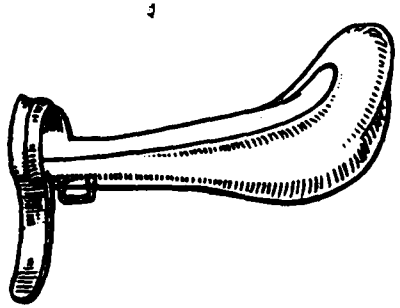
The stirrup leathers had single buckles which were worn near the stirrup, the spare end in a roll.

The stirrups were heavy and narrow in the thread.

(2) Heavy Cavalry Saddle.

This pattern was used by some Heavy Cavalry Regiments before the Crimean War.

It was similar to that known as O. P. Transport Saddle and Royal Artillery O. P.



Tree.

The tree conformed to the hunting saddle tree, but was much heavier, having arches of wood, with gullet plates, bar plates, and cantle plates, and being without any extension of the side bars in front or rear of the arches. Iron stirrup staples were fitted to the tree.

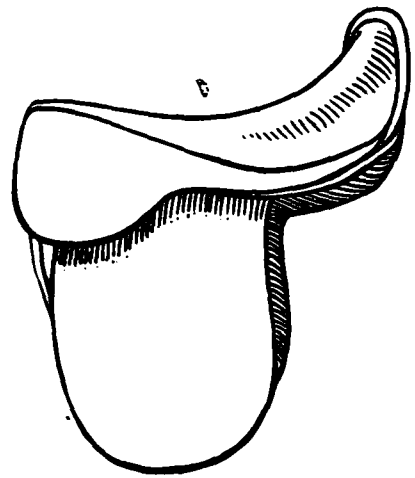
The seat was of hide (cow hide split) formed on stretched web and serge, and padded with flock, as in the hunting saddle. The length of seat varied, some being very short.

The Household Cavalry saddle up till 1894 was of this class, but with extended side bars (fans) in rear of cantle.

The flaps were broad and short.

The pannels were formed like those on the hunting saddle, but heavily stuffed with flock.

A blanket was worn in the Crimea under these pannels.



Saddle.

The girth was the same as the one described for the pilch seat saddle (see above) and similarly attached, and the stirrup leathers and stirrups were also similar.

Breastplates and cruppers were worn.

(3) Universal Wood Arch Saddle.
(Nolan Pattern)

This pattern was introduced in 1854, and made in three sizes. It was in use in British Cavalry regiments in India as late as the year 1885.

The arches were of wood, the front arch being upright, while the hind arch sloped to the rear, and had a high cantle.

The front arch was strengthened with an iron gullet plate and three crown plates, the hind arch with an iron plate and two fan plates. The fan plates were omitted in later manufacture.

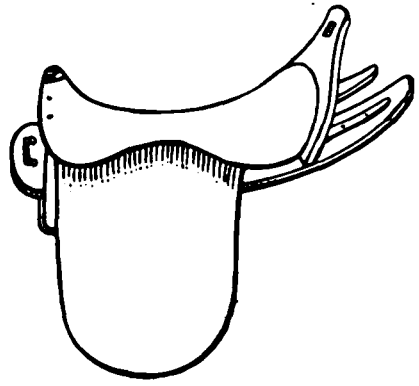
The side bars were 24 inches in length, having slots in them for stirrup leathers, and smaller holes for securing the girth and girth tabs by lacing.

The seat was of solid leather, blocked and riveted to the arches, and about 16¾ inches in length.

The length of seat afforded to the rider was considerably reduced by the shabraque and sheepskin, each having a thick leather seat worn over the saddle, these when strapped down between the arches by the surcingle gave but 16 inches of length.

The flaps were short, and medium width, and set straight.

The pannels were heavily stuffed with horsehair and lined with white serge, the facings (rounded parts on the edges) were very thick, and the weight of a pair of pannels averaged from 5 lb. to 6 lb.



SADDLE.

Numnahs were introduced when the blanket was taken away, and were worn with the pannels.

The girth was of stout web as described in the pilch-seated saddle and similarly attached.

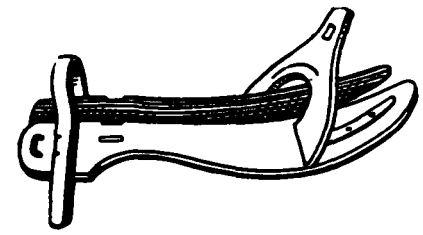
The latest manufactured trees were fitted with iron staples for carrying two girth straps on each side, and a solid leather girth having buckles at each end was brought into use.

The stirrup leathers and stirrup were as described with the pilch-seated saddle.

Cruppers and breastplates were worn, the latter attached to a ring on the crown of the arch.

The carbine bucket was a small 10-inch leather tube, with an iron bound mouth. It was suspended from the front arch off side, so as to hang a little below and in front of the wallet. A strap attached to a ring on the crown of the arch was used to buckle round the small of the butt of the carbine to hold it securely.

In 1868 the long carbine bucket, worn as now, was issued generally; it had a broad leather flap to attach to the surcingle, and a leather rounded strap to fasten the carbine in the bucket.



TREE.

In 1869 the shabraques were withdrawn.

The defects found in this saddle were as follows:—

The attachment of girth was too far back. The pannels were too thick. The hind arch was too high.

The joints of the arches opened owing to the constant washing of the wood (to get it white) and by the strain of the load. The gullet plate required frequent renewal.

The front arch stood a strain of 4 cwt., but being elastic it yielded slightly under this weight.

(4) UNIVERSAL FLAT IRON ARCH SADDLE.

This pattern was introduced in 1870, and made in three sizes.

The tree stood but 2½ cwt. on the arch.

The arches were of flat iron, the cantle was low, being without a spoon; the side bars were similar to the previous pattern, but rather thinner.

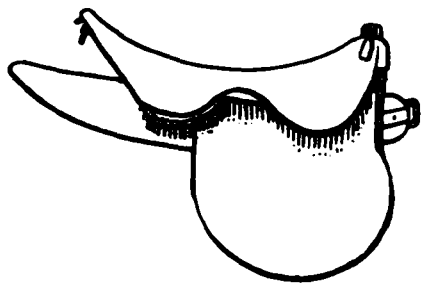
Stirrup slots and girth bars were as with the wood arch tree.

The seat was of solid leather, attached to the arches by straps and buckles. The flaps were short.

The pannels had heavy welts, and facings like a thick cord round the edges and under the flaps, and were thickly stuffed with horsehair. The flaps of the pannels were shorter than on previous saddles.

The girths were of solid leather, as mentioned in the previous pattern.

Breastplate and crupper were worn. Stirrup leathers as before, but the stirrups were less bow-shaped.



FLAT IRON ARCH.
Tree same as (5) but flat iron arches.

This saddle was weak and unserviceable, the arches opened and let the seat down, the bars were too thin to carry the iron arches and often split.

The girth straps were set too far back on the saddle, they depressed the hind part, the weight of the rider not being properly distributed over the bearing parts of the pannels caused the saddle to ride forward, and girth-galls resulted.

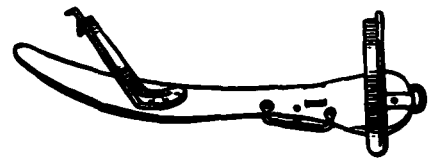
The low cantle and the absence of a spoon made it practically impossible to keep the centre of the rear pack up off the horse's back.

(5) UNIVERSAL ANGLE IRON ARCH SADDLE.

This saddle was introduced about 1876, and made in three sizes, later in four. This saddle differed from the flat iron pattern in having stronger arches of angle iron.

The authorities had recommended that the arches should be low, and they were so made, but they proved faulty. Those of later manufacture were ordered to be made with the hind arch higher than formerly, but it still gave a low cantle.

The girth straps were placed much more forward, directly under the stirrup slots. This corrected the tendency of the girth in its old position to cause the saddle to ride forward.



ANGLE IRON ARCH TREE.
Saddle as (4).

The girth, breastplate, &c., were as in the previous pattern.

After the introduction of pattern 1890 saddle (see p. 342) an 8 oz. steel plate was fitted to the front arch, which strengthened the bearing power of the saddle. Originally it stood a steady strain on the front arch of 3 cwt, but after the plate was added, 4 cwt.

The low cantle did not allow the centre portion of rear pack or valise to be strapped up sufficiently off the animal's back. It allowed idle and short stirrup riders to sit with the greater weight on the hind arch, depressing the rear part.

(6) UNIVERSAL PATTERN 1890 SADDLE.

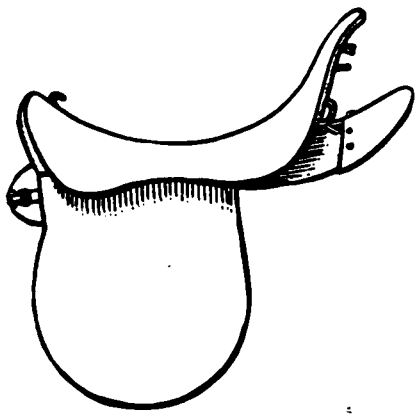
Made in four sizes, and to stand a pressure of 6 cwt. on the front arch. They are now in general use.

The arches were of wrought steel, the front being of channelled form, the hind bevelled with a spoon to give a high cantle. The high cantle was intended to give a more secure seat, to

allow the rider to mount readily, and to admit the rear pack being strapped well up in the centre.

Stirrup links were fitted to the side bars in lieu of slots. This was necessary, as with the slot arrangement stirrup buckles were often pulled over the top edges of the wood bars, causing sore backs, particularly when thin pannels were employed.

About two years subsequent to the introduction of the saddle, the V. Attachment was authorized to replace the links for attaching the girth straps. The first pattern was fitted with dees, the latter, which is still in use, with brass plates.



SADDLE

Numnah pannels are approved with this saddle, and a Numnah of new shape was introduced similar to present pattern.

Hair pannels were replaced by a blanket 4½ lb. in weight, when first introduced, and afterwards increased to 5 lb.

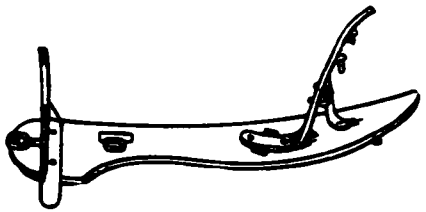
Breastplates similar to the hunting pattern (i. e., attached to the front of the side bars and not to a ring on the front arch) came into use and cruppers were discontinued.

The old pattern breastplate attached to the crown of the arch, worked continuously on the pommel ring with every movement of the horse's shoulder, and as the saddles were often cocked up with the thick pannels an objectional see-saw drag on the saddle was caused.

The *Seat* was formed of two layers of thin leather, having a thin piece of felt between, and supported by a web underseat. A solid seat was brought in as Mark II. in 1892. A slightly wider arch with an increase of ¼ inch in height as Mark III. in 1898.

The *Girth* was a wider leather one than formerly and split 6 inches on each side of the centre to give elasticity behind the elbows, leaving a 6-inch solid centre.

The *Sheepskin* was divided into front and hind, and the hind part could be shaped into a Valise. They eventually became obsolete.



TREE.

The *Carbine Bucket* in 1890 was a small one like an elongated pistol holster. A narrow arm stiffened with whalebone had replaced the broad leather one. The suspending straps were placed on the sides to allow the bucket to be worn on either side of the horse

Many of the changes of pattern brought in at this time were recommended after trials extending over some years by the Saddlery Committee of 1884, of which General Sir Frederick Fitz-Wygram, I.G.C., was President, General Sir Charles Fraser and other experienced Cavalry officers were members.

(7) Universal Steel Arch 1902 Saddle.

This is made in three sizes, large, medium, and small.

It is a lighter saddle than the previous pattern. The arches are of wrought steel, the front of bevelled steel, but with points cut off flush with side bars, the hind arch of angle steel with spoon cantle riveted on and lower than before.

The side bars are thinner and shorter than those in the 1890 saddle; they are intended to be worn covered with felt pannels.

The front ends of the bars (Burrs) are shorter than those in previous saddles.

Flaps.—These are set more forward than was the rule for the preceding saddles.

(8) Household Cavalry Saddle.

The saddle issued to regiments of Household Cavalry (after the system of providing them regimentally ceased in 18[illegible]) was determined by the three Commanding Officers.

The tree was of the same type as that used in the hunting saddle and O.P. Transport mentioned above.

The tree was of beechwood strengthened with iron plates, the bars being covered with glued linen cloth, and in part with pigskin; the side bars extended behind the cantle; the latter was [illegible]; the seat was of [illegible] leather riveted to the [illegible] and [illegible] inches in length; the girth straps were sewn to web, being attached to the tree.

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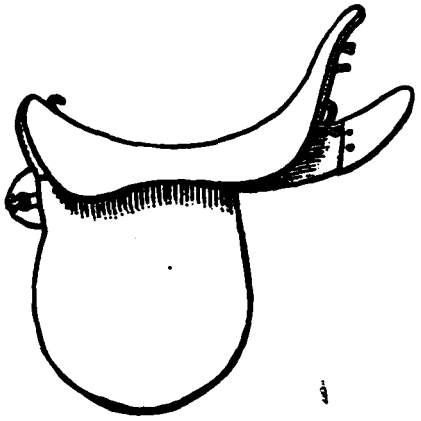

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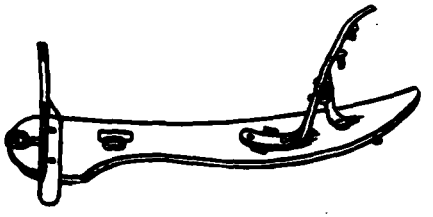

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Flaps.—These are set more forward than was the rule for the preceding saddles.

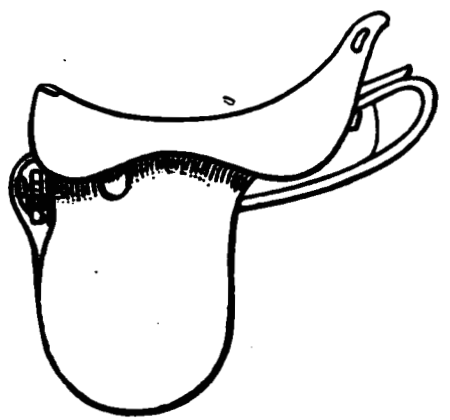
TREE.

Breastplates.—A percentage only used.

Wallets and Numnahs.—Obsolete.

Numnah Panhels.—To be worn on each saddle with a saddle blanket.

The points of the front arch on previous saddles were de-



SADDLE.

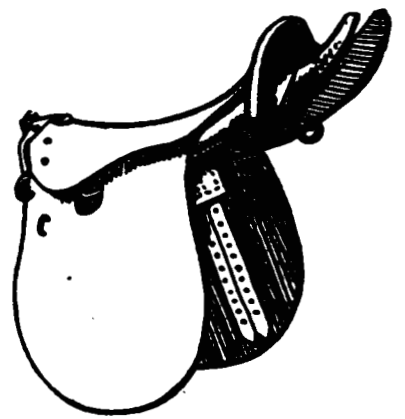
signed to give the front a fork grip, but they were an evil, preventing saddles otherwise suitable being used on larger horses than the grip of the points indicated; their removal allows the saddle a wider range of fitting and the front arch a less chance of opening by their leverage.

(8) HOUSEHOLD CAVALRY SADDLE.

The saddle issued to regiments of Household Cavalry (after the system of providing them regimentally ceased in 1880) was determined by the three Commanding Officers.

The tree was of the same type as that used in the hunting saddle and O.P. Transport mentioned above.

The tree was of beechwood strengthened with iron plates, the bars being covered with glued linen cloth, and in part with hogskin; the side bars extended behind the cantle; the latter was brass bound; the seat was of solid leather riveted to the arches and 18½ inches in length; the girth straps were sewn to webbing attached to the tree.



The pannels were similar to the line Cavalry pattern, but stuffed with white flock and fitted with sweat flaps.

The seat, which was 1 inch longer than the old regimental patterns, caused much dissatisfaction; shorter seated saddles as in use before 1880 were considered advisable to prevent chafed backs and galls, and in 1895 this saddle became obsolete, and the line Cavalry saddle (1890 pattern) was substituted.

Individual opinions of experienced officers have varied widely on many points of detail, such as blankets, wallets, &c. When first approved in 1890 some authorities considered a 4-lb. blanket suitable, while others preferred one of 7-lb. weight.

Eventually a 5-lb. blanket became the standard.

In 1901 the same wide difference of opinion prevailed; some advocated a very light blanket, others a very heavy one. On active service two blankets will now be carried, one for the horse and one for the man.

Wallets are now obsolete, though many authorities advocate their reintroduction, to free the rider of some of his present awkward load. Prior to 1884 they were so made that when filled, they bulged forward and backward, taking up seat room. The later pattern was formed with double gussets, which extended outwards to take up less space on the saddle and to give a bed for the rider's thigh or knee. Single loops at the back were placed so as to give an oblique set to the wallets to suit the angle of the rider's thighs. When partly filled with straw they formed good knee pads, and were frequently used in the early stages of breaking restive horses.

Unfilled, they gave the young rider a sense of security in the saddle, and acted as a crutch to timid horsemen.

Pannels stuffed with hair or flock have not proved so serviceable as felt (Numnah) pannels.

Felt pannels give advantages lacking in saddles used with bare side bars. They admit of layers of felt being added to build up the bearings; they get a certain grip of the blanket and provide knee rolls; they also give protection to the wood bars when off the horse.

Finality is hard to reach, especially in patterns of military equipment.

Doubtless Committees on Saddlery will sit again and improvements in materials will result in further decrease of weight, but it is hoped that the details above set forth will be of value to would-be reformers, and save them from going over ground which has been traversed before by generals and other officers of no less experience than themselves.

WIRELESS TELEGRAPHY.

(From the *Royal Engineers' Journal*)

Translated from a Lecture by Major Ferrié, of the French Military Telegraph Department, in the *Annales des Ponts et Chaussés*, by A. H. Scott.

WIRELESS telegraphy furnishes an almost unique example of a scientific discovery arrived at solely by previous theoretical reasoning.

Maxwell having mathematically proved that the properties of light could be compared to those of an electro-magnetic vibratory motion, Hertz sought to verify this statement experimentally, and succeeded in creating electrically a vibratory motion possessing all the properties of light.

Wireless telegraphy—optical telegraphy's first cousin—had been discovered; it was only some years later, however, thanks to other scientists, Telsa, Lodge, Popoff, Branly, and last, but not least, Marconi, that this invention was practically made use of.

Before therefore describing wireless telegraphy at its present stage, it may be well to call to mind the properties of Hertzian waves.

A.—HERTZ'S EXPERIMENTS.

If a condenser be connected to the terminals of a source of high-tension electricity, and also to two small metallic spheres, it is found that, if the spheres be brought within a certain distance of one another, the gap between them is bridged by a spark, due to the discharge of the condenser. This discharge is not a sudden neutralization of the electricities of opposite sign on the spheres, but a series of oscillations of the electricity in the discharge circuit, *i. e.*, an alternating current is produced in this circuit, which dies out more or less rapidly according to the resistance of the circuit and of the spark. The frequency of this current is very great and varies with the capacity of the condenser, and with the size and shape of the wires connecting it to the spark gap. Frequencies greater than 1,000 million alterna-

tions per second have been produced, *i. e.*, vibratory motions having a wave length of less than 1 centimetre, but they cannot compare with the vibrations of light, the wave length of which is about 1/2000 millimètres.

These electrical vibrations are transmitted through the atmosphere by means of waves, known as Hertzian waves, which can be reflected, refracted, or polarized just like light waves. They have the property of being able to generate in any metallic circuits they meet alternating currents similar to those produced in the original circuit. This phenomenon can be experimentally illustrated as follows:—Electrical oscillations or alternating currents of high frequency are generated in a circuit consisting of a source of electricity, a condenser, a spark gap, and a few turns of wire wound round a core. A second circuit consisting of a condenser of adjustable capacity, a few turns of wire, and a detector is fitted up *(Fig. 1)*.

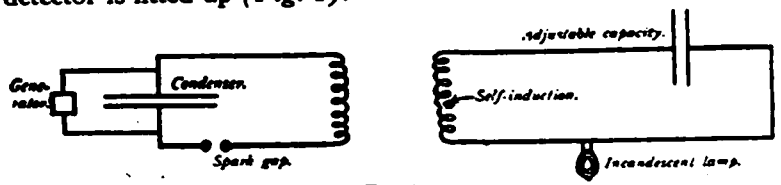


FIG. 1.

Now were this second circuit connected to the source of supply, the frequency of the alternating current generated in it would depend on the capacity of the condenser and the number of turns of wire *(i. e.*, the inductance); so that we see that the two circuits, as fitted up, can be "syntonized," or got in tune, by varying either of these factors. If the two circuits be placed close enough together, an ordinary incandescent lamp can be used as a detector; it will then be noticed that the lamp becomes very brilliant for the value of the factors, which is such that

Inductance of No. 1 Circuit × capacity of No. 1 Circuit
= Inductance of No. 2 Circuit × capacity of No. 2 Circuit,

i. e., when the circuits are syntonized.

The time of duration, T, of an electric oscillation in a circuit of capacity, C, and self-induction, L, is given by the formula

$$T = 2\pi\sqrt{C.\ L.}$$

The wave length of the vibratory motion produced, *i. e.*, the distance travelled by the vibration whilst the oscillation lasts is given by

$$\lambda = V.\ T,$$

where V = the velocity of light.

The experiment just described explains the theory of wave meters, that is to say instruments for measuring the wave length of the electric oscillations due to the discharge of a condenser. A wave meter generally consists of a circuit containing an adjustable capacity, an adjustable inductance, and a detector (generally a thermal ammeter). Each apparatus has a reader giving the wave lengths corresponding to various values of the capacity and inductance, from which the desired result is obtained.

Yet another characteristic of alternating currents of high frequency is their power of propagating themselves in open circuits. Thus, if the second circuit of the above experiment be replaced by a straight stretched wire, the centre of which is only a short distance away from the generator circuit, the following phenomena may be observed:—

(1). The vibratory action induced in the wire travels to its extremities and is then reflected.

(2). The incident and reflected vibrations interfere with one another, and if the length of the wire has been properly chosen, it is possible to observe by means of suitable detectors, the production of electrical waves and depressions similar to the vibrations in a stretched string.

Now the distance between the summits of two consecutive waves or the bottoms of two consecutive depressions, is equal to the wave length of the vibration, so that, provided it is not too long, we have a second method at our disposal of measuring wave lengths.

As soon as Hertz's experiments were known, several scientists declared that if sufficiently powerful waves could be produced, they could be used for the transmission of telegraphic signals. Marconi, when aged 19, was, however, the first man who made any real attempt to put the Hertzian waves to prac-

tical use, and his success is due to the use of a vertical conductor, termed aerial, which increased the distance the waves could travel.

No attempt is here made to describe in detail Marconi's experiments, or the means by which he brought wireless telegraphy to its present state of perfection; it is only intended to give a rough outline of the various forms of telegraph now in use.

B.—Wireless Telegraphy.

The problem of wireless telegraphy can be divided into two quite distinct parts—(*a*) the transmission and (*b*) the receiving of signals.

Transmission is accomplished by producing at a point long and short series of Hertzian waves, combined so as to reproduce the letters of the Morse code. To ensure that the waves will travel some distance, they are generated in a vertical conductor or aerial—either directly or by induction—from a special circuit.

Direct generation of the waves in the aerial was used from the beginning by Marconi; now, however, it is almost entirely in disuse. In this system the aerial formed one plate of a condenser, whose other plate was the earth. The secondary of an induction was connected to this condenser, a battery and key in the primary circuit being the means of signalling. Two metallic spheres at the terminals of the secondary circuit formed the spark gap (*Fig.* 2).

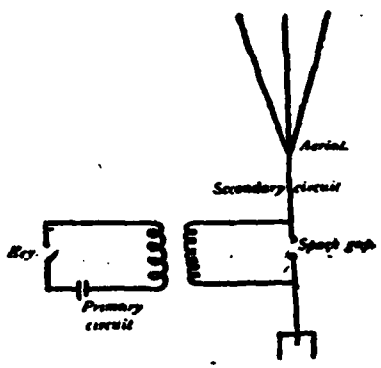


Fig. 2.

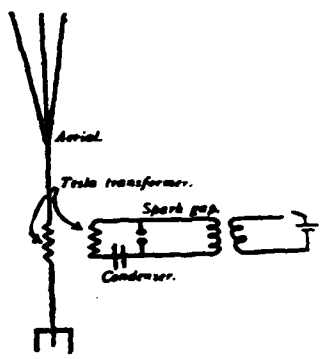


Fig. 3.

In the second method the spark gap is in a special circuit, and the Hertzian waves are transmitted to the aerial by means of a Tesla transformer (*Fig.* 3). The condenser in the special circuit can be charged either by an induction coil, or by means of the secondary circuit of an alternating current transformer, to be varied. A key in the primary circuit is used for "sending."

Experiment shows that the "range" of the waves increases with the height of the aerial, or, in the case of an aerial consisting of several wires joined at their base, with the area covered.

The waves travel along the surface of the ground, but how, is as yet not well understood. They go round obstacles like sound waves, or rather by a phenomenon similar to the diffraction of light. When they meet an aerial similar to that by which they were produced, they create in it electrical oscillations similar to those which existed in the transmitting aerial. These oscillations are very feeble; they become most intense when the two circuits have the same period of vibration, *i. e.*, when they are syntonized.

The presence of these weak oscillations is detected by making them act on a wave detector either directly or by means of a specially calculated little transformer.

The commonest types of detectors are the Branly coherer, the Ferrié electrolytic detector, and the Marconi magnetic detector. The last two are the most commonly used forms, and are about equally good as regards sensitiveness and ease of use.

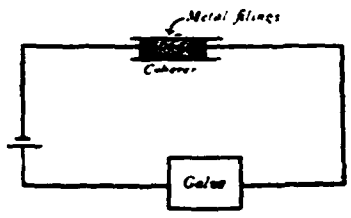


Fig. 4.

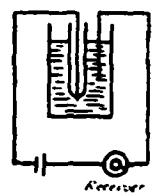


Fig. 5.

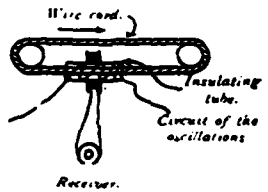


Fig. 6.

The Branly coherer (*Fig.* 4) consists of a glass tube containing metallic filings, between a pair of metallic electrodes. If this coherer be connected in series with a battery and galvanometer, it will be seen that no current flows through the circuit.

When, however, Hertzian waves are produced near the coherer, it becomes a conductor, and remains so after the waves have ceased, but the very slightest tap is sufficient to "de-cohere" it again. It will thus be seen that this apparatus, if provided with a suitable tapper to "de-cohere" it, can be used to receive the dots and dashes from the transmitting station and pass them on to the ordinary telegraph apparatus for the reception of messages.

The electrolytic detector consists of a platinum wire soldered into a glass tube, so that only about 1/100 millimétres of the wire project beyond the glass into a jar of acidulated water. The wire is connected in series with a battery telephone receiver with a return to the water (*Fig.* 5). As soon as the current flows, the short wire gets polarized and the current stops. Hertzian waves depolarize the point, the current flows, and a noise is heard in the receiver; when the waves cease, the reverse process takes place. Telegraphic signals can thus be read "by ear" in the receiver. The Marconi magnetic detector is based on the effect of the Hertzian waves on the magnetization of a cord of thin wire. This cord passes through an insulating tube wound with wires carrying the waves. A coil connected to a telephone receiver is placed round the tube *(Fig. 6)*. When the cord is moved in the proximity of a magnet placed near the coil, noises are heard in the receiver. They are due to the currents induced by the changes in magnetization of the cord, under the influence of the electric oscillations.

Other detectors are Fleming's valve and the carborundum detector. The latter is especially useful for transmitting continuous waves. The process described above only produces very much damped vibrations, which begin afresh with each spark, and the reception of signals is not always as clear as might be desired; thus for short distances untuned receiving stations often receive messages not meant for them, even from stations emitting waves of a different wave length to their own. This constitutes one of the disadvantages of wireless telegraphy.

Attempts have been made to obtain good results at receiving stations by means of undamped vibrations, on the following principles: When a condenser is connected to the terminals of a

continuous current arc lamp (*Fig.* 7), it is found that an alternating current, whose frequency depends on the capacity of the condenser, exists in the condenser circuit, and by giving the capacity the proper values, Hertzian waves of the right strength for signalling can be produced. The best results are obtained when the arc is enclosed in an atmosphere of hydrogen or lighting gas, and when placed in an intense magnetic field.

Attempts have also been made to construct alternators generating high-frequency oscillations direct, but hitherto apparently without any very great success.

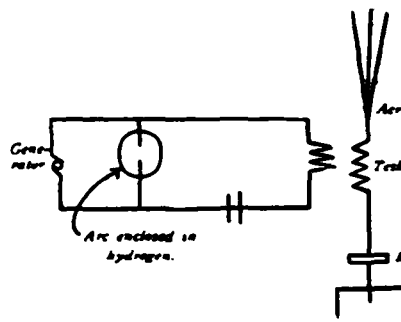


FIG. 7.

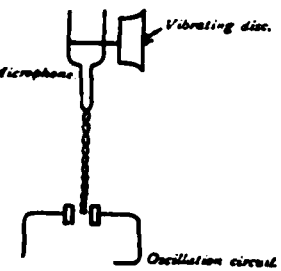


FIG. 8.

C.—Wireless Telephony.

The use of continuous waves and of the "singing arc" have also been employed for the purposes of wireless telephony. The apparatus used is as follows:—The aerial is excited by means of damped waves, an arc lamp replacing the spark gap. The microphone is either in series with the aerial or in shunt with the Tesla transformer in the aerial. The best form appears to be a water microphone. This consists of a vibrating disc, which is fixed to a glass funnel terminating in a sharp point (*Fig.* 8). Acidulated water falls from the funnel; when speaking, the vibrations of the voice induce vibration in the liquid, and the conductivity between the two contacts varies. As these are in the oscillating circuit, variations in intensity can be noticed and the human voice reproduced.

D.—Directional Wireless Telegraphy.*

The first attempts made to direct the waves by means of large mirrors, in the foci of which the aerials were placed, met with little or no success.

The use of horizontal aerials, giving a maximum intensity in the opposite direction to that towards which the aerial points, was next tried, but was only useful for short-distance signalling.

Now experiments are being made with a view to utilizing the phenomena of interference by the use of two or more aerials. The results are as yet incomplete, and only allow of a maximum effort being made in one direction and a minimum in the others, and not as in wire telegraphy, of all the effort being made in one direction—along the wire.

E.—Applications of Wireless Telegraphy.

The Navy has most profited by the invention and development of wireless telegraphy. Stations all along the coast communicate daily with the steamers, some of which even edit a daily newspaper with the latest political and commercial news.

The Marconi Wireless Telegraph Company has attempted to compete with the Trans-Atlantic Cable Company, but the service is somewhat irregular on account of atmospheric variations.

It is interesting to note that the military station on the Eiffel Tower at Paris receives all the telegrams exchanged between Canada and Ireland, although 5,000 kilomètres distant from the former country.

In the Colonies and for communicating with lighthouses and lighthouse boats, wireless telegraphy is invaluable, and in any future war it will certainly play a large rôle, as has been shown by the French operations in Morocco.

In a word, everywhere where ordinary telegraphy cannot be used, or where it is too expensive, wireless comes to the rescue. It must, however, be remembered that it has come not to replace but to help its predecessor where hitherto it has been powerless.

*Experiments in directive field wireless telegraphy have been made at the Army Signal School, at Fort Leavenworth, which, while not entirely successful, indicate that it is possible to concentrate or direct the maximum energy in certain directions within very small limits as to divergence. It can be readily seen how important this question is in making field wireless telegraphy practicable in service.

CANADA AS A COUNTRY FOR BREEDING REMOUNTS.

By Lieutenant Colonel V. A. S. WILLIAMS, A. D. C., R. C. D.,
Inspector of Cavalry.

(From the *British Cavalry Journal.*)

The Canadian National Bureau of Breeding was organized in the spring of 1908, being incorporated under Dominion of Canada Charter in the autumn of the same year with offices in Montreal.

The object of the society is the improvement of the breed of horses in Canada, by placing thoroughbred stallions of class and pedigree within easy reach of farmers with good cold-blooded mares: from the very first its operations have been attended with unqualified success, and it has been the means of revealing a state of affairs which few thought existed in Canada, viz.—that the country from coast to coast has been hungering for the thoroughbred, and that Canadian farmers have been only waiting for a chance to improve the breed of their horses.

The Canadian Bureau is not a commercial concern: it holds the view that the reason farmers have not benefited by the use of thoroughbred blood is because such blood has not been easily available, the fees for thoroughbred stallions being very high and the initial cost of purchasing such horses being beyond the reach of the average farmer; and it is therefore undertaking to secure the stallions and to deliver them free of all cost to responsible men, who in turn will give their neighbors the service at a nominal fee, which will go to pay for the maintenance of the stallions.

The conditions are most simple and have been approved by thousands of farmers who have written to the Bureau commending it for its liberality and fairness.

One of the strictest rules of the Bureau is that the horse shall be well cared for, and the right is reserved to take back any horse which, in the opinion of the Bureau Inspector, is not properly treated. Successful applicants have hitherto taken the

greatest care of the horses entrusted to them, and exhibit a keen delight in keeping them in the very best possible condition.

It is not only in the case of stallions that the Bureau's influence is felt, for the brood mares, too, are getting far better treatment than formerly, being looked after on the lines laid down by the Bureau.

Every man who has charge of a Bureau horse is supplied with a service book in which is registered the name of the owner of every mare covered, so that the Bureau can keep in touch with them, can send instructions and advice regarding the care of both mares and foals, and can further direct the War Office buyers and others to the farms where good half-breed horses can be bought. To provide such information is one of the most important features of the work, for it is now admitted on both sides of the Atlantic that the new organization, if successful, will go far towards solving the remount problem in England by creating a type of horse suitable for the Imperial Cavalry.

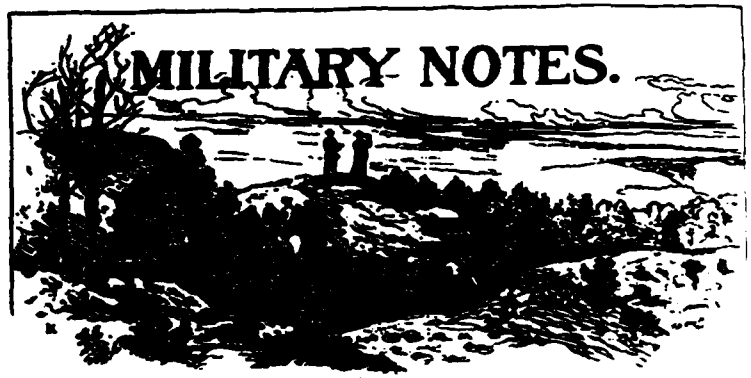
All governments acknowledge that the only way to get cavalry horses is by means of the thoroughbred cross, yet such is the state of the breeding industry in Canada, that even the mounted branches of the permanent forces in Canada and Royal Northwest Mounted Police have great difficulty in getting the saddle horses necessary to keep their forces up to the standard. When it is considered that the Province of Alberta is twice the size of Great Britain and Ireland, and that the Province of Saskatchewan is larger than France and Germany, the scarcity of saddle and cavalry horses is all the more surprising; yet the hundreds of appeals to the Canadian Bureau from the Canadian Northwest show the cause of this lamentable state of affairs to be simply that the farmers and small breeders have no thoroughbred stallions and are forced to breed to anything that is available.

Let the demand for blood stallions be supplied, and when the next national emergency comes, the millions spent for cavalry horses will remain within the Empire instead of going to enrich other nations, as was the case in the late South African war. Kipling's motto, "Keep the money in the family," is not a bad one to follow, especially in times of national stress.

It is understood that the Bureau will place one hundred

stallions before the end of 1909, and if possible put out an equal number every year for the following four years: if this plan is carried out, Canada will have the greatest breeding bureau in the world and in round figures about £1,000,000 per annum will go into the pockets of Canadian farmers.

In conclusion I must add that though the Canadian National Bureau is not controlled by or affiliated with any jockey club or racing association, it aims at being on friendly terms with all such organizations, realizing as it does that the race course is the training ground of the thoroughbred and that racing is the supreme and only trustworthy test of the pure-blooded horse.



THE FARRIER.

Of the many improvements which have taken place in the several departments of the army, not one has received so little encouragement and recognition as the Training School for Farriers and Horseshoers, at Fort Riley, Kansas.

I believe this may be accounted for, not through lack of appreciation for the work being done there but through our newly acquired habit of taking things as matters of course, and a forgetfulness of the conditions that obtained in the service previous to the establishment of this school.

The troop and battery commanders of 1898 are now majors at least, who, as a matter of course, are out of touch with the minor details of troop or battery routine. Their places have been taken by young men who, naturally enough, look wholely to the future, who know little of the army routine of the past and who consequently have no basis for comparison.

Previous to the establishment of the Fort Riley school, the veterinarian, if conscientious, instructed the farriers of his regiment. Why some of these men were appointed as farriers at all will always remain a puzzle to me unless it was because they could neither read nor write but had a troop reputation as a

"Joe Dandy" on "lampers," bots, worms, fits and glanders. I know many of them were appointed because they were good post-hole diggers, "strikers" or "coffee coolers."

I remember, in my unsophisticated days, of once asking an old troop commander of my regiment to either relieve the farrier, who was a dunce, from caring and exercising four private trotting horses so he could give more attention to the troop cases, or appoint an intelligent man in his place. The troop commander, the salt of the earth too, looked at me in unfeigned astonishment and remarked: "Do you know what you are doing? You are interfering with a custom of the service that has obtained from time immemorial." The customs of the service being holy things in those days I refrained from committing a sacrilege.

It was a difficult problem to instruct the farriers in veterinary lore, except through the eye, for be it remembered they took little interest in "book learning" and none at all in lectures except in those relating to alcohol and its effects. Any alcohol that found its way to their particular organization was considered as food with which to eke out their ration.

Some of them drank their alcohol unadulterated, while those of an artistic temperament absorbed it in the form of a milk punch, egg nog, or "picket line" cocktail.

Through the efforts of General Carter the school at Fort Riley was established, and it has done excellent work along the lines laid down for it. Personally, I was doubtful for a number of years as to its success, knowing from long experience what the instructors had to contend with in trying to develop the small quantities of grey matter distributed among the students.

I was also aware of the poor interest organization commanders were taking in the school and its work, and the little thought they gave to the selection of the men sent there to represent the organization and the regiment.

Due mostly to lack of interest by those who would be most benefited, the school has had a very difficult and thankless task to perform; moreover, it was handicapped by the unfavorable prejudices of nearly everybody, mostly because it was an innovation.

I believe that all this prejudice has entirely disappeared, but I still believe that commanding officers do not show sufficient

interest in this matter, and I know that they can furnish better men for instruction.

The troop commanders' point of view is about as follows: "They want me to send another man to Riley. I have a good farrier now. He will never make a non-com., so he will remain as farrier indefinitely. I could send Brown. He's an intelligent man and a horseman too, but I need him for a corporal when Sergeant Murphy retires. I'll send them Blank before I have to put him before a general. He's a 'boozoid' and isn't good for anything. They'll put the 'gaffs' to him down there." He sends Blank who is as useless at the school as he had been in the troop. If he had sent Brown he would have had a good farrier as well as a good non-commissioned officer, both excellent things in any mounted organization or detachment.

The battery commander looks at it this way: "A man to the Riley school. That's going to bust up a section. What do I want with a farrier anyway? They are not authorized for field artillery. I have the best stable sergeant in the service who will serve in the battery until he retires. They're interfering too much with the battery. No independence at all any more. Making farriers for us that we're not allowed, and making us do main guard too. What is the service coming to, I'd like to know? I'll send them Jones. He's generally cook's police when he's not on picket line punishment. It's true he doesn't savey much about a horse but the trip would do him good, and me too. I suppose I could send Corporal Johnson or Sergeant Moore, but that would make me short a gunner, or a chief of section. It's up to Jones so I'll let it go at that."

Jones of course it as useless as Blank of the cavalry, and as the faculty at Riley is not permitted to trephine the heads of students these two men return to the organizations with each cranial hiatus as full of nothing as when they departed.

Occasionally a wise and far-seeing officer sends a bright man to the farriers' school and on his return, if he gets into the stable as a farrier before he is appointed a corporal, we learn of the hard work, the grind and the struggle of the Riley instructors. Their fears, hopes and small triumphs.

The men who graduate from the school are, as a rule, a credit to it. They are keen to increase their knowledge and

are willing to continue to study and learn. It has been my pleasure to assist some of them through one of the best veterinary colleges in the United States, and they are now in good paying private practice.

The Fort Riley training school for farriers and horseshoers is deserving of more generous treatment at the hands of the mounted organizations. It should, at least, have intelligent men sent there for instruction, preferably men who are intended for non-commissioned officers. I have often thought that all applicants for admission to the school should be required to pass a fair mental examination, and that they should also be temperate in their habits, before the United States is put to the expense of their transportation.

It is believed that the signal corps, engineers, infantry machine gun platoons and mounted infantry, when organized, should have their complement of farriers. I am of the opinion that each wagon train of the quartermaster's department should have a man detailed as farrier, that this man should have better pay than that of a teamster and that he should be instructed at the Fort Riley school.

We owe the farriers and horseshoers' school at Fort Riley our loyalty, encouragement and support. It has accomplished, against odds, a great good to the service, a good that is not yet properly appreciated. We owe it to the instructors to send them material on which they may do effective work that will bear healthy and useful fruit.

The school owes it to us to be still more practical in its instruction and to go more into the details of forage allowances, feeding, salting, watering and exercising. Grain capacity of the usual army utensils used in camp such as tin cup, G I bucket and nose bag. Bridling, saddling, cinching, halter and rope tieing, capacity of a double handful of oats, or bran and things of that character which are invaluable in the field.

It is to be sincerely hoped that soon, the fact that a man has graduated from the Fort Riley training school for farriers and horseshoers will be a strong recommendation, in his favor, for promotion.

GERALD E. GRIFFIN,
Veterinarian Third Field Artillery.

OVERWORKED ARMY HORSES.

(From the *Broad Arrow.*)

Our contemporary, *The Daily Mail,* quoted this week under a heading, "Overworked Army Horses," the last four lines of our comment in our issue of the 10th inst., where we animadverted on the constant use of the horses of the Regular Army by Territorial mounted units. The lines quoted were: "In these days the Regular 'hairey' cannot look forward to a week-end rest, as formerly was the case. Two pounds of extra oats is his sole reward for being bucketed and spurred in the Long Valley and elsewhere on a Saturday afternoon." Now anyone reading the above quotation would naturally suppose that it was the Regulars who were the culprits in overworking their horses, whereas we pointed out in the first part of our comment the scandalous manner in which, under the orders of Mr. Haldane and the Army Council, the horses of the Regulars were being used by the Territorials, especially on Saturday afternoons. From time immemorial it has been the custom in the Regular Army not to have mounted parades on Saturday except for a few squads at riding drill. Saturday is usually the day set aside for a thorough cleaning up of equipment, harness, saddlery, etc., after five days' drill during the week, and the horses have had a well-earned rest in consequence. Under the bad new times the horses, especially at our large military centers, are placed at the disposal of the Territorial Army, although Sir John French the Inspector-General of the forces, distinctly stated in his recent report that such a procedure was unsound, for if, as he remarked, the Regular units lent their horses in the way that now obtained, it was a proof that the Regular units "do not use their horses sufficiently so as to render these units as efficient for war as they should be." But what does Mr. Haldane care for the opinion of the Inspector-General of the forces when, in the House of Commons on the 12th inst., he stated that by lending the horses of the Regular Army to the Territorials great "mutual advantage" to both was gained thereby? We now ask, what is the use of having an Inspector-General if his official opinion on efficiency is set aside by a civilian whose sole idea is to borrow from the Regular Army so long as the result is a saving of money for the Socialistic schemes of his colleagues in the Cabinet?

JAPANESE CHILD SOLDIERS.

(From *The Seventh Regiment Gazette.*)

Gen. Kuropatkin writes entertainingly in McClure's of Japan's methods of preparing for war. He says:

"In their military school, where I saw a Spartan system of education, the exercises of the cadets with pikes, rifles and broadswords were not approached by anything of the kind that I had witnessed in Europe—it was fighting of the fiercest character. At the end of the struggle there was a hand-to-hand combat, which lasted until the victor stood triumphant over the bodies of the vanquished and tore off their masks. In these exercises, which were very severe, the cadets struck one another fiercely and with wild cries; but the moment a pre-arranged signal was given, or the fight came to an end, the combatants drew themselves up in a line and their faces assumed an expression of wooden composure.

"In all the public schools prominence was given to military exercises, and the scholars took part in them with enthusiasm. Even in their walks they practiced running, flanking and sudden unexpected attacks of one party on another. The history of Japan was everywhere made a means of strengthening the pupil's patriotism and their belief in Japan's invincibility. Particular stress was laid upon the country's successful wars, the heroes of them were extolled, and the children were taught that none of Japan's military enterprises had ever failed."

HEALTH OF ARMY HORSES—STATISTICS OF THE DIFFERENT ARMS.

(From *Artilleristiche Monatschefte*, June 1909.)

The number of horses in the Prussian Army (including the 13th Wurttemberg Army Corps), was 86,104 as given in the statistical veterinary report of 1906.

Of these, 40,204, or 44.12 per cent received veterinary treatment. This is a most unfavorable condition and one which has not been reached within the last ten years (in 1905 only 36.4 per cent).

The cause lies in the frequent appearance of disease of the chest and colic.

Especially numerous cases of sickness were had in the

	Number of Cases
Army riding school	58.3%
Battery horses of foot artillery	56.6%
Cavalry	48.9%

Below the average were—

Field artillery	44.9%
Train	37.4%
Machine gun detachments	31.5%
School of gunnery for field artillery	23.6%

(The most favorable health conditions.)

The great number of cases in the military riding school is due to the great demands made of the horses. Opinions are divergent as to the bad state of health of the horse detachments. Some give as a reason the lack of understanding in the care of a horse—while the very good condition in the machine-gun detachments, the personnel of which is not more familiar with horse management than is the one of the horse detachments speaks against it. Others again give as cause of the low ability of resistance of the cold-blooded horses, the hardships imposed and the inclemency of the weather. In comparison to what the horses are to perform in war, the demands made in time of peace are trifling, especially since the normal feeding is assured. Could it not be that the pace required of the horses might be too fast? The very favorable state in the school of gunnery for field artillery is explained by the fact that they have no remounts, but only full-grown horses, and likely also, that the animals are kept in motion for long periods in the open during the summer and winter.

Translated by E. A.

THE LANGDON CARTRIDGE ATTACHMENT.

This consists of a device for holding twelve regulation cal. 38 revolver cartridges so arranged that they can be loaded into the cylinder of the revolver three at a time or two at a time or one at a time.

The attachment can be quickly fastened to any sort of a sword belt or saber belt without removing the belt plate or buckle or the slings or other attachments from the belt.

The attachment is held in place by means of tempered steel spring clips which are black japanned and so shaped as not to tear the clothing.

This device has had the test of hard wear in the Philippines.

ARTILLERY HARNESS BITS.

The principal function of artillery horses is draft—to surely get the battery to the proper place at the proper time; saddle qualities are of secondary importance. Therefore, whatever facilitates draft, should be thoroughly considered and adopted.

As to the saddle horse, his head is a heavy weight at the end of a long lever, and hence any movement of the head affects his balance. This point is fully recognized by all riders who exer-

cise great care in setting a saddle horse's head, and the progress in his training is slow, until his head has been gotten into position. Until this is accomplished, he is unsteady in his movements, affected as they are by the displacement of his head, and also by the displacement of the rider's weight, which is located on the horse in the form of an unstable top load. Movements of these two weights disturb the position of the animal's center of gravity, and consequently necessitate movements of his legs to recover his balance. The artificial conditions we thus impose on him, must be compensated for by artificial aids.

When a horse is in heavy draft, his feet, if the footing is at all precarious, slip and thus cause his center of gravity to continually shift. He naturally makes every effort to prevent such slipping by digging in his toes, as can be seen at any time by noticing a horse that is pulling a heavy load up hill. He is steadied while so engaged by two means—one is the resistance of the load, and the other is the pull on the reins, a good driver maintaining a strong support. Hence it appears that either a saddle or draft horse is in a state of more or less unstable equilibrium when at work. Where, as with the artillery harness horse, the animal is both a saddle and draft animal simultaneously, his equilibrium is doubly unstable, and special efforts are necessary to maintain his balance. This result can be aided only by the driver sitting as squarely and steadily as possible in the saddle, and maintaining a strong, even pull on the reins of both horses of his pair. This pull on the reins performs the double function of keeping the horse's head steady, and giving him something to lean against, or, in other words, affording a support, all with the purpose of keeping the equilibrium as stable as possible. Unless a horse can thus feel this assistance, he will not exert his full strength, nor can he be reasonably expected to do so, especially if his feet have slipped from under him a few times.

Incidentally, it may be mentioned that for a *short* effort the rider's weight, if put on the forehand as much as practicable, is an advantage to the horse in draft, since like heavy shoulders in an animal, it increases the weight in front of the point of support (the front foot in contact with the ground). But here, again, the horse must be supported to prevent slipping.

Any support on the reins is, of course, transmitted to the horse through the bit. If the curb is used, it is so painful that the animal will not go up against it; consequently he cannot exert his full strength. By then resorting to the whip, poor or inexperienced drivers soon make such a horse into a balker, and he is ruined. If the horse does go up against the curb, to a certain extent, his mouth, by constant repetition of the severe pressure, becomes so hard that at ordinary work the bit has but little effect, and hence the considerable number of hard mouthed horses in our service. Another point in this connection, though a minor one, is that the action of the curb is to bring in a horse's head and arch his neck, thus producing a swelling of the muscles of the throat, and consequent interference to some extent with his breathing, at the very time he needs all the wind he can get.

On the other hand, the snaffle is mild in its action and enables the driver to give the necessary support to his horses without inflicting pain. In addition, horses when purchased, are accustomed to working in this bit, while rarely has a new artillery horse ever had a curb in his mouth, due to the fact that they are generally fresh, young, unschooled horses of the light draft type, that have been worked on the farm or in delivery wagons or in light carriage driving. At the best, it takes some time before such a horse can be made to pull a heavy load up a steep grade if the curb is used. This point is important in the regular army and in the militia in time of peace; it is of the greatest importance in war, when the loss in horseflesh is heavy and time for training new animals very limited. In the recent war in the Far East both sides used the snaffle.

Proof of the unsuitability of the curb bit for untrained horses can be seen in almost any militia battery, where in an encampment it will generally be noticed that the horses (hired for the occasion), are rarely driven with the curb action, the usual custom being to either remove the curb chain altogether, or to attach the bridal reins to the upper rings of the bit—either method resulting in a snaffle, though a very poor one.

Additional advantages of the snaffle are, that one size fits all horses, thus avoiding the present multiplicity of sizes in curbs, that it is the simplest and cheapest bit used, that it is easily ad-

justed by even an inexperienced man, and that it has no attachments (chain, hooks, etc.), to be lost or broken, whereas the curb bit must be carefully fitted to each separate horse, and the attachments are constantly lost, broken or neglected by the men.

It is a platitude to say that no horse has naturally a hard mouth. The average horse when he enters the service has a very good mouth, and if he afterward loses it, it is due to the improper use of the curb bit.

It may be asked, if the snaffle is so much better, why was the curb ever introduced?

The answer is simple and merely requires going back a few years in history. In the days of the smooth bore gun and the muzzle-loading musket the range was short, that of the gun not greatly exceeding the musket. The artillery was then employed for the purpose of increasing the volume of fire at a desired point and the pieces were often brought up to the infantry firing line. Large masses of artillery were kept in reserve on the battle field itself and, at the thickest part of the fight, dashed up to the firing line at a gallop and unlimbered. Again, pieces fired canister at short range and as long as possible, and if then withdrawn, the limbers galloped up to the pieces and then galloped off with them. Such procedure necessarily required severe bits to certainly control the horses. When the breech-loading rifle was introduced its proper method of use was not at once seen, and it also dashed around at fast gaits and made sudden halts, requiring the curb bit. But as the gun improved, giving greater range, and the projectile improved with its fuze, either time or percussion, that could be depended upon, it was found that the old concentration of fire could be obtained without actually moving the pieces themselves, but by merely changing the direction of fire. Thus, suppose a force to occupy a front of about four miles; it is evident that a gun placed in the center could fire anywhere along the front, since its extreme range would have to be only about two miles or 3,500 yards. This, to a great extent, obviated the necessity of dashing around at a gallop, though it was many years before the fact was fully realized, for the military is decidedly a conservative profession, and the employment of war material is always more backward than its development. Proof of this is seen in the fact that up to five or six years ago

we still carried canister though its use had long been obsolete. In the same way we have continued the use of the curb bit, fostered in this case by the fast and unreal drills on the parade ground and in riding halls which do not, of course, represent any real work with the modern gun.

Artillery officers seeing these drills with empty chests formed their idea of mobility thereon, naturally clung to the curb bit, and overlooked the fact that empty chests are not a field condition. The United States is believed to be the only great nation of the world that uses the curb exclusively on its artillery team horses. In some countries the bit and bridoon is used on the near horse, but the snaffle on the off one, thus giving the driver an available snaffle on each horse.

It is thus evident that the snaffle is a much better bit for all artillery in war, for militia artillery in peace, and for regular artillery on marches, etc.

It therefore remains only to consider regular artillery in garrison work.

Actual test has shown that there are only two classes of horses that cannot be controlled by the snaffle. First a few newly purchased ones which by being driven at a fast gait at drill or review become overexcited by the noise of their new and strange surroundings and attempt to run away; second, a part of the old battery horses whose mouths have been ruined by the curb. As to the first class, by accustoming them gradually to their surroundings there will be few such animals and the few can soon be stopped if a cannoneer sets the brakes and especially if the chests are full of ammunition, and the drivers allow the runaways to do all the work. But the presence of such horses is, as a rule, an indication of incomplete training—the horse having been put to battery work too soon, instead of being gradually accustomed to his military surroundings. As to the second, they can sometimes be cured by using a snaffle, so placed in the mouth as to bring pressure on a part that has not been made callous by the curb.

In other cases, some horses learn that, by continuing to pull against the curb, their mouths become numb, and they do not feel the pain; such horses, in a short time, improve with the

snaffle, when they learn by experience that the bit does not necessarily hurt.

In some few cases the curb will be necessary; these cases can be determined only by actual experience. But in no case should this bit be used as a substitute for regular draft work, which is the best horse controller in existence.

CAPTAIN WM. J. SNOW,
Adjutant Sixth Field Artillery.

GRADUATING RIDE-MOUNTED SERVICE SCHOOLS.

The following program of the graduating ride at the Mounted Service School of Equitation at Fort Riley, July 2, 1909, has been furnished by one of the graduates. He writes: "I am enclosing a copy of the program of the graduating exercises of the Mounted Service School which may be of interest to those officers who are contemplating taking the course here. I consider that the year I have spent here has been the most profitable and interesting one of my life. I cannot speak too highly of the work done here and its value to the mounted services. Any officer who has an opportunity to take the course should by all means do so."

PROGRAM.

The indoor graduating ride, to be given in the School Riding Hall, beginning at 8:30 a. m., will be an exhibition of the details of the work in the course of Equitation and Horse Training—the methods pursued and the results obtained.

1. *Breaking Class.*

A division of young horses bred and raised in Wyoming and purchased in August, 1908. These animals have been acclimated and conditioned at the school remount farm, but were not handled or groomed until May 1 of this year. The two months of training prepare the young horses for the Training Class of the ensuing year. The officer learns the methods of handling an absolutely green colt and the animal receives his instruction at the time when his trainer has a maximum of experience.

2. *Trained Bucker.*

Ridden by First Lieutenant N. E. Margetts, First Field Artillery.

3. *Training Class.*

A division of horses bred and raised in Missouri or Kentucky and purchased in September, 1907. These animals were handled in the Breaking Class of last year and have been ridden by the class of this year since November 1, 1908.

Training has been along lines adapted to military purposes only. Progress depends upon the individual ability of horse and rider.

4. *French "Sauteur."*

This horse has been trained by the senior instructor according to the methods prescribed at the Cavalry School at Saumur. He executes, at the signal, various jumps and kicks tending to unseat the rider. The animal is ordinarily spread-lined between two padded posts, but on this occasion will be ridden at liberty by his trainer, Captain W. C. Short, Thirteenth Cavalry.

5. *Training Class.*

An exhibition of jumping by a division of the horses described in No. 3. As the bones and tendons of young horses are not strong enough for hard work, the colts of this division are jumped but once a week.

With this division will also be exhibited the approved methods of using the cavesson and longe.

6. *Schooled Horses.*

A division of horses bred and raised in Missouri and purchased in June, 1906. These animals were broken by the class of 1907, trained by the class of 1908, and have been ridden during the entire year by the present class.

They serve two purposes in the education of the officer: he feels a correct response to properly applied aids, and learns what is expected of his individual training colt.

Moreover, these horses are not assigned; each is ridden daily by a different officer, who thus acquires experience in riding animals of different dispositions. The schooled horses will jump all reasonable obstacles.

7. Trained Jumpers.

A division of service horses transferred to this school from various organizations of the army as strong, free jumpers.

These animals are ridden without stirrups at the beginning of the course while the student officer is acquiring his seat, are used for instruction in indoor jumping and, during the spring, are used for cross-country work. Not assigned. A different rider daily.

July 3, at 8:30 a. m.

The entire class will ride the cross-country course in Magazine Cañon.

RANK OF NON-COMMISSIONED OFFICERS.

Recently there has been considerable discussion regarding the adjustment and re-arrangement of the rank of certain officers who suffered by the operation of the laws regarding promotion in force some time since.

Without going into the question of the right or wrong of the suggested adjustment there is no question but that it is unfortunate that the condition of affairs complained of does exist. Yet the same condition of affairs exists in every regiment in the service so far as the relative regimental rank of non-commissioned officers is concerned. To illustrate: A soldier is assigned to a troop, and in due course of time is appointed a corporal. He has been fortunate (or unfortunate) in being assigned to a troop where the non-commissioned officers are of fairly long

service, and where the changes are few. His prospects of promotion to a sergeantcy are slim. Another soldier is assigned to another troop where the changes in the non-commissioned officers are frequent, and our second soldier is also appointed a corporal. In a short time he becomes a sergeant, while our first soldier remains a corporal with no prospect. To make the example a more conspicuous one suppose our second soldier is made a corporal some time after our first soldier, but gets his sergeantcy first.

Both men being of equal ability, will it be unnatural for the first soldier to feel dissatisfied at the relative rank and pay of the two men? We see it every day among officers, and naturally it exists among the non-commissioned officers.

Is there a remedy?

Among officers the question of relative rank is confined to the arm of the service. It is believed that a workable and equitable method of regulating rank among the enlisted personnel can be worked out, and that this relative rank may be confined to regiments.

In working out this scheme the following assumptions are made: That date of first warrant should govern rank, everything else being equal. That *within the troop* the work of the non-commissioned officers (excepting the first sergeant and quartermaster sergeant) varies very little. This is naturally subject to some question but the working out of the problem will be shown later.

That *within the troop* a non-commissioned officer's authority is the same whether he is called sergeant or corporal, the man's *relative rank* determining his authority in the troop. That when non-commissioned officers come together the oldest non-commissioned officer in length of warrant should be the senior. That nothing is more irritating to the old corporal than to be bossed by a "Rooky" sergeant. That the troop is the *important unit* and nothing should be done to break up its spirit or unity.

Remedy: Instead of each troop being composed of eight sergeants and six corporals, let each regiment have ninety-six sergeants and seventy-two corporals (staff non-commissioned officers not here considered), let each troop be allowed fourteen

non-commissioned officers, at least two of whom shall be sergeants (first sergeant and quartermaster sergeant). Let the appointments of non-commissioned officers be as at present. When a vacancy occurs in the grade of sergeant promote the senior corporal in the regiment (if he is competent). The troop commander with a vacancy appoints a corporal in his troop, keeping up his quota of non-commissioned officers. The troop commander with the senior corporal merely calls him Sergeant Jones instead of Corporal Jones. In the troop Sergeant Jones has no more authority than Corporal Jones had. On guard Jones is not jumped by a corporal junior to him. On the payrolls Jones's pay is increased, due to his length of service. Jones is happy, the new corporal is happy, every man being paid, and having rank compensate with his length of non-commissioned service; and no one is hurt.

The extreme case will be where one troop will have all its non-commissioned officers corporals. This is, however, an extreme case, and the probability of its occurring is very slight. Even in this case the troop with all the corporals has non-commissioned officers just as efficient personally as though they were called sergeants. The amounts that the senior corporals are underpaid is practicably nil, while the scheme proposed will keep the troop spirit up, and will keep satisfied older corporals, even though their relative rank in the troop is slight.

It has been suggested that when a vacancy occurs that the senior corporal be promoted and transferred to the troop with the vacancy. This is objected to for two reasons, namely: the non-commissioned officer would be shifted to different troops, thus breaking up proper troop spirit; and the troop commander having the vacancy would have to take somebody else's appointee, instead of making one of his own men. This latter state of affairs resulting from the transfer of the promoted non-commissioned officer would be objectionable in the extreme.

At first blush many will say that the scheme proposed is not practicable but it is firmly believed that a careful actual working out of the scheme will develop few real objections, and that these will easily be balanced by the resultant removal of one chance for growl, namely, relative rank, and by the fact

that non-commissioned officers' positions will be more secure, and soldiers who wander from one regiment to another on the chance that they can pick out a troop with easy promotion will find it less easy to get chevrons, the result being that it will be worth while to stay in one regiment—faithful service in one regiment will be rewarded, and the bright but erratic "rolling stone" will find more difficulty getting the promotion he seeks.

Result: Faithfulness rewarded. Greater permanency in non-commissioned officers. Greater efficiency.

The "Home Service" non-commissioned officer who spends his time in regiments in the states going from one regiment to another will be abolished and we will have in white regiments non-commissioned officers of long service in the regiment, such as the colored regiments enjoy now.

EDWARD L. KING,
Captain Second Cavalry.

Problems.

PROBLEM NO. 12.

(See CAVALRY JOURNAL for July, 1900, page 172.)

SOLUTION.

First Requirement.

Captain A upon arriving at the crossing at Frenchman about 8:45 a. m., halts his troop. His advance guard has taken up temporary outpost duty during the halt. Captain A then makes a hasty reconnaissance of the immediate terrain with a view to utilizing it in the best way for a stubborn defense. His information of the enemy is not very precise but his mission is plain.

At 9:15 a. m. Captain A orders the following dispositions for defense:

One cossack post, one n.c.o. and three men, dismounted at the Flint House.

One cossack post, one n.c.o. and three men on small ridge 700 yards north of Frenchman dismounted.

One detached post, one n.c.o. and seven men, on the north edge of the top of Sentinel Hill dismounted.

One platoon, dismounted, is placed in position along the west bank of Salt Creek east of the bridge and ordered to prepare the sector occupied by it for defense by scarping the bank so as to form a banquette on which to stand and utilizing the natural bank as a parapet. Some slight clearing of underbrush is to be made.

Similarly one platoon, dismounted, is posted west of the bridge with similar orders for preparing the sector for defense.

Each platoon is ordered to take up a front of about 50 yards, thus leaving room for reinforcements to come into the firing line in case of attack.

A third platoon is held in reserve under the slope of the east bank of the stream which is about ten yards wide at the bottom. This platoon is ordered to prepare small trenches and rifle pits at the flanks of the position and on the east bank, so placed as to procure flanking fire up and down the stream and protect the main position from small parties of the enemy attempting to advance along the stream bed.

The horses are watered and placed under cover of orchard and hillside on the west slope of the ridge just west of Gauss House, near junction of ravines. One n.c.o. and eight men are left with the horses.

The bridge is prepared for rapid destruction should this become necessary.

Second Requirement.

Captain A, from his hasty reconnaissance of the terrain, notes that there are three methods of defending the crossing:

(a) Either to go *beyond* it and take a position just north of Frenchman, digging trenches so as to cover the Frenchman-Kickapoo road and sending a strong detachment to cover the Atchison Pike: this method might be modified by concentrating in trenches placed to cover both roads near the Frenchman house.

(b) To occupy the high ground just south of the bridge, utilizing the orchard for cover, and destroying the bridge.

(c) To occupy the bed of the stream itself, prepare bridge for destruction, and utilizing the bank of stream as a parapet.

Captain A has decided on the latter course because of the peculiar nature of the terrain, and the small force at his disposal.

When Captain A desires, or is forced to withdraw, he will not have an obstacle in his way as he would have had by the first method.

The enemy in attacking the position taken up by Captain A will not have the stream bed for an avenue of approach as he would have had by the second method.

Captain A, by choosing the third method, will also be able to get a greater number of rifles on the firing line than would have been possible in either of the other methods, for he can reduce his horse holders to a minimum.

The field of fire offered by the position chosen is equally good if not better than from either of the other positions; grazing fire will be secured.

Concealment of position and strength of force holding it is an important consideration, and it is believed that the method chosen procures this advantage.

That the enemy may be taken by surprise and the defending force secured against it, seems also to be attained by Captain A.

If a serious attack is made, the enemy will actually have to come hand to hand with the defenders to carry the position.

In either of the other methods field guns from Taylor Hill or from a position west of it, would have a much better target. In the selected position, due to the natural cover of the fringe of trees, it will be difficult for the enemy to observe accurately the effect of any of his artillery fire.

Again a flank or turning movement is less to be feared, though of course it is possible. In this connection Captain A would, if time permitted, undoubtedly prepare a simple narrow trench on the ridge that the Baker House stands on, but this would be a later measure and not contemplated in his original dispositions.

A night attack is less easy of success than it would be in either of the other methods.

Captain A secures fairly good cohesion of his force and simplicity in its command.

Water is conveniently at hand for both men and horses.

Captain A should be able to give his horses more rest by this plan of defense than in either of the other two plans, and in a campaign, this consideration must weigh heavily when deciding on measures to be taken. Other things being equal it is believed that this alone would justify Captain A in his decision.

PROBLEM NO. 13.*

(See map of Fort Leavenworth—CAVALRY JOURNAL for July, '07.)

SITUATION.

Missouri and Kansas have declared war against each other.

The First Division, Missouri troops, has advanced to the Missouri River, seized the terminal bridge (the Fort Leavenworth bridge having been washed out by the last high water), and, during the afternoon and evening of August 31st, 1909, has crossed to the Kansas side.

Cavalry detachments sent out at dawn on September 1st have found Atchison Hill and Sheridan's Drive held by the enemy. At 6 a. m. Colonel A, commanding the divisional cavalry, with the bulk of his regiment, which is in assembled formation, is near point 66, when he receives the following message from the division commander:

Prison Hill, 1 Sep't., '09, 5:50 a. m.

Colonel A, First Cavalry:

I am reliably informed that a hostile force, about a division, was encamped yesterday afternoon near Lowemont, about ten miles northwest of here. The line Atchison Hill-Sheridan's Drive is now held by the enemy in some force.

The division will advance at once for the purpose of capturing that position. You will coöperate in the movement, operating against the hostile right and rear. Btry. A, 2d F. A. (horse) has been sent to you.

Send messages to Prison Hill.

X,
Maj. Gen'l.

The discharge of hostile artillery is now heard from the direction of Atchison Hill. A trooper, who had been with an officer's patrol, rides up and reports that he has just come rapidly from Hund Hill where the patrol was surprised by a large cavalry advance guard (he did not know how many men it had), which was then advancing at a trot. The patrol scattered and he does not know what became of the other members. By the time this information is obtained, the captain of the horse battery with his command has reported to Colonel A.

Required:

1. Colonel A's estimate of the situation.
2. His initial orders.

* The approved solution will appear in the September number of the CAVALRY JOURNAL.

Editor's Table.

A PLAN TO PROMOTE THE EFFICIENCY of the CAVALRY, FIELD ARTILLERY, COAST ARTILLERY AND INFANTRY.

For several months past the Fort Leavenworth Branch of the U. S. Cavalry Association has had under discussion the above subject. A committee was appointed to prepare the plan to be discussed by the Branch with a view of evolving a scheme of promotion that would be satisfactory to not only the cavalry service, but the entire line of the army as well; a plan on which all could unite and which would, if practicable, equalize promotion in the line.

This committee prepared an elaborate report with tables, etc., showing the effect the proposed scheme would have on promotion on the several arms. This report was fully and freely discussed at several meetings and the first four propositions, as finally amended, were adopted as follows:

I. That the number of officers in each arm of the service should not be determined wholly by the enlisted strength and organization of their respective arm, but should be fixed by law in accordance with the needs of the service.

II. That, whenever the number of officers in any grade of any arm of the service is increased, the other arms, by the voluntary transfer of officers in such grade to the same grade of the arm thus increased, should receive their proportionate share of the said increase, based on the number of officers in each arm respectively, before such increase. *Provided*, that if the requisite number of officers in such grade do not voluntarily transfer, that number of the senior officers of the next lower grade, as may be junior in order of seniority shall be promoted and transferred, and *Provided* that any

officer so transferred and promoted who may be junior to any officer of the arm to which he is thus promoted and who by this promotion becomes senior to such officer of the arm to which transferred, such promoted officer shall remain at the foot of the list to which promoted until those who were previously senior in that arm shall have been promoted and who upon such promotion shall revert to their former status of seniority.

III. That the ratios between officers of different grades should be the same in all arms of the service, and that, by means of the so-called extra officers bill, and the detailed staff, these ratios should be so fixed as to correct, as far as practicable in this manner, the existing irregularities in promotion.

IV. That additional regularity and rapidity of promotion as far as necessary and practicable for the efficiency of the service should be secured by eliminating the inefficient in all grades (with or without pay depending on whether or not the inefficiency is due to their own acts or omissions), and by retiring the least efficient in the grades of colonel, lieutenant-colonel and major with the rank and three-fourths the pay of the next higher grade: *provided* that any field officer of thirty years' service may elect voluntarily to retire with the next higher grade.

The following addhtional propositions, intended to provide recognition of specially meritorious service and the elimination of the inefficients of all grades, are in harmony with the four propositions given above and were approved or rejected as noted after each:

V. That no officer of the line of the army below the grade of colonel shall be promoted until he has been declared by a board of officers of the army to have passed a very thorough mental and physical examination. The mental examination to be as practical as possible and to cover sufficient ground to demonstrate whether the officer has made the best use of his opportunities in his present grade and is thoroughly prepared to perform the duties of the grade to which he is to be advanced. No officer to be promoted unless he is recommended for promotion by the board which examined him. If the officer is found disqualied physically by reasons of physical disability contracted not through his own misconduct, he is to be retired as now provided by law. Should he be found disqualified mentally he is to be wholly retired on one year's pay if his examination is for promotion to the grade of first lieutenant or captain, if for promotion to a grade above that of captain he is to be retired on a fixed per cent of his pay.

Adopted.

VI. That some means should be provided whereby specially meritorious service can be rewarded and for this purpose a board should be convened once a year with authority to make a thorough investigation of all officers whose services might be considered exceptionally good, and if the board believes that there are any officers whose services entitle them to special recommendation, the President may nominate them for promotion to the

next higher grade. Officers so promoted to remain at the bottom of the grade to which they have been promoted until all officers who were senior to them have been promoted, when they will take their regular place in the line. No officer to be advanced more than one grade.

This proposition provoked considerable discussion and was finally rejected by about a two-thirds vote.

VII. That in time of peace a board of general officers should be convened to recommend to the President the names of a certain number of colonels of the line whom the board considers qualified for promotion; the President to make his selection from those so recommended.

Adopted.

VIII. That no person except graduates of the Military Academy shall be appointed a second lieutenant in the army until he is recommended by a board for such appointment, after having passed a thorough examination.

Adopted.

IX. That the Articles of War be so amended as to provide that when an officer is sentenced to dismissal by a court-martial the convening authority must approve or disapprove so much of the sentence as carries dismissal, but that it cannot be mitigated.

This proposition was not adopted, as it was believed by some that such a proposition would trench upon the prerogative of the President to grant reprieves, etc., and therefore unconstitutional.

The report of the committee mentioned above, in addition to the several propositions noted, was as follows:

The following calculations are intended merely to illustrate the application of the first four of the propositions submitted to our organization and to show their effect on promotion and the retired list. It is not claimed that this detailed solution of the problem is the best that can be made under the general scheme here outlined. The vote on the above propositions will not be considered an expression of opinion concerning what follows.

When the field and coast artillery have filled the grade of second lieutenant to the maximum authorized by law, the number of officers in each grade in each arm, respectively, will be as follows, not including the detailed staff or Porto Rico regiment:

TABLE I.

GRADE.	Infantry.	Cavalry.	F. A.	C. A.	Totals.
Colonel	30	15	6	14	65
Lieutenant-colonel	30	15	6	14	65
Major	90	45	12	42	189
Captain	450	225	66	210	951
First lieutenant	450	225	78	210	963
Second lieutenant	450	225	78	210	963
Totals	1500	750	246	700	3196

The ratios in the infantry, cavalry and coast artillery between officers of different grades are the same and are as follows:

Colonels to lieutenant-colonels.....1 to 1
Lieutenant-colonels to majors.....1 to 3
Majors to captains.....1 to 5
Captains to first lieutenants.....1 to 1
First lieutenants to second lieutenants.....1 to 1

To secure the same ratios in the field artillery without reducing the number of officers in any grade, officers must be added to the field artillery in the different grades as follows:

Colonels 0
Lieutenant-colonels 0
Majors 6
Captains 24
First lieutenants 12
Second lieutenants 12
Total 54

The number of officers in each grade of each arm after this increase is as follows:

TABLE II.

GRADE.	Infantry.	Cavalry.	F. A.	C. A.	
Colonel	30	15	6	14	
Lieutenant-colonel	30	15	6	14	
Major	90	45	18	42	
Captain	450	225	90	210	
First lieutenant	450	225	90	210	3196
Second lieutenant	450	225	90	210	54
Totals	1500	750	300	700	=3250

To illustrate how this increase will be distributed, consider the grade of captain. Before making the increase the total number of captains is 951. Accordingly the twenty-four vacancies in the grade of captain will be divided among the four arms so as to give the infantry 450/951 of 24, or 11+; to the cavalry 225/951 of 24, or 6—; to the field artillery 66/951, or 2—; and to the coast artillery 210/951, or 5—.

The increase in the other grades would be similarly distributed, the inequalities due to the fractions being regulated in the most equitable manner possible.

To illustrate further: The eleven vacancies in the grade of captain to be filled from the infantry promotes the eleven senior first lieutenants of infantry to field artillery. As far as practicable for the best interests of the service, captains who desire, not to exceed eleven, will be allowed to transfer to the field artillery. If none so wishes to transfer, the eleven lieutenants promoted will be transferred by the Secretary of War.

Similarly, cavalry captains who so desire, not to exceed 6, may be allowed to transfer to the field artillery, or, failing such voluntary transfers, the 6 senior first lieutenants of cavalry will be promoted and transferred. And in like manner the 5 vacancies to be filled from the coast artillery will be disposed of.

By this process each arm will be given its proportionate share of every increase made in any grade of any arm.

The number of officers in the different grades of the staff departments, not including the Medical Department, Engineer Corps, and Chaplains, and their proper distribution to the different arms of the service are as follows:

TABLE III.

GRADE.	IN STAFF DEPTS.	DISTRIBUTION TO ARMS OF SERVICE.			
		Inf.	Cav.	F. A.	C. A.
Colonel	20	13	7	8	6
Lieutenant-colonel	42	29	10	4	9
Major	100	46	23	9	22
Captain	155	72	38	14	33
First lieutenant	43	20	10	4	9
	369	170	86	39	79

After the staff departments are wholly filled by details from the line the number of officers in each grade of each arm should be as follows:

TABLE IV.

GRADE.	Inf.	Cav.	F. A.	C. A.	Total.	
Colonel	43	22	9	20	94	
Lieutenant-colonel	49	25	10	23	107	
Major	130	68	27	70	295	
Captain	522	261	104	243	1130	
First lieutenant	470	235	94	219	1018	3250
Second lieutenant	450	225	90	210	975	300
	1670	836	334	775	3619=3619	

This addition of officers has disturbed the original ratios existing between officers of different grades, so that they are no longer what they were originally, but they remain practically the same in the different grades.[1]

1. The officers of the Judge Advocate General's Department [illegible] detailed staff of the army in the letter of the Secretary of War [illegible] and dated May 28, 1908, and they are included in this [illegible]

the service. Thus the ratio of colonel to lieutenant-colonel which originally was 1 to 1 is now, for the infantry 1 to 1.14; for the cavalry 1 to 1.14; for the field artillery 1 to 1.11; and for the coast artillery 1 to 1.15.

Tabulated, this and similar information for the other grades will appear as follows:

TABLE V.

GRADE	OLD RATIO	NEW RATIO.			
		Inf.	Cav.	F. A.	C. A.
Colonel to lieutenant-colonel	1-1	1-1.14	1-1.14	1-1.11	1-1.15
Lieutenant-colonel to major	1-3	1-2.77	1-2.72	1-2.7	1-2.78
Major to captain	1-5	1-3.84	1-3.84	1-3.85	1-3.80
Captain to first lieutenant	1-1	1-.90	1-.90	1-.90	1-.90
First lieutenant to second lieutenant	1-1	1-.95	1-.95	1-.95	1-.95

In the three higher grades may be noted a marked change in the ratios, over the old ratios, in favor of better promotion. This improvement may become more marked by making a proper distribution to grades of the officers provided for in the extra officers bill, presupposing it will be enacted into law.

In the following table the 612 officers are distributed to the different grades in accordance with the ratios prescribed in the bill as it passed the Senate, except that the 130 second lieutenants are distributed among the other grades. This is done because it is believed second lieutenants should spend their entire service in that grade with troops, especially so if they are to remain in that grade but 5 or 6 years.

Note—(The Warren bill provides for 36 colonels, 54 lieutenant colonels, 90 majors, 162 captains, 144 first lieutenants and 126 second lieutenants.)

TABLE VI.

GRADE	Present No. Officers.	No. Officers Bill.	No. After Passage of Bill.	RATIOS.	
Colonel	94	46	140	Colonel to lieutenant-colonel	1-1.24
Lieutenant-colonel	107	68	175	Lieutenant-colonel to major	1-2.33
Major	295	113	408	Major to captain	1-3.27
Captain	1130	204	1334	Captain to first lieutenant	1-.90
First lieutenant	1018	181	1199	1st lieutenant to 2d lieutenant	1-.81
Second lieutenant	975	000	975		
Totals	3619	612	4231		

How large a measure of relief will be furnished by this readjustment of the ratios by means of the detailed staff and extra officers bill will be shown by an application of the mortuary and casualty tables to the 4th column in the above table, and any further relief necessary should be secured

by the elimination of the least efficient in the grades of colonel, lieutenant-colonel and major, by retiring them with the rank and 75 per cent of the pay of the next higher grade.

From the letter of the Secretary of War accompanying S. 7254 (The Elimination Bill) are taken the following percentages of each grade eliminated annually because of death, resignation, dismissal, dropping, wholly retiring, and retiring with 75 per cent of pay:

Generals	29.00 per cent
Colonels	5.90 per cent
Lieutenant-colonels	4.60 per cent
Majors	3.50 per cent
Captains	2.27 per cent
First lieutenants	1.88 per cent
Second lieutenants	1.88 per cent

Applying these percentages to column 4 in the above table, the number of officers in each grade eliminated and promoted annually is as follows:

TABLE VII

GRADE.	ELIMINATED ANNUALLY	PROMOTED ANNUALLY
Generals	0.25	
Colonels	8.26	0.25
Lieutenant-colonels	8.05	17.51
Majors	14.28	25.56
Captains	30.28	39.84
First lieutenants	22.54	71.12
Second lieutenants	18.33	92.46

A glance will show that natural causes do not create sufficient vacancies to give the desired promotion, and relief must be secured by elimination of the inefficient in all grades, and of the least efficient in the grades of colonel, lieutenant-colonel and major. As a basis for our calculations we will seek a solution which will promote an officer to the grade of major after ten years' service as a captain.

During an officer's first year of service as captain 30.28 captains senior to him are eliminated by natural causes, during his second year as captain 9/10 of 30.28 or 27.25 captains senior to him are so eliminated and during his ten years as a captain [(30.28—27.25)÷30.28]×10 =1066.54 captains senior to him are eliminated. Resolving this progression into an equivalent one of 2560 terms (instead of 10) we obtain an almost absolutely accurate result, and find it to be 151.48. This has the effect of reducing the total number of captains for the purposes of this calculation by 151.48, giving 1334—151.48=1182.52; and 1/10 of this number, or 118.25 must be promoted annually. Referring to the table it will be seen that 39.84 are promoted annually to fill vacancies created by natural causes; consequently 118.25—39.84=78.41, say 78 will be the number of vacancies that must be created by elimination.

It is impossible to say how many of these vacancies will result from the elimination of the *inefficient*, and the discussion will be continued on the supposition that *all* will be created by the elimination of the *least efficient* colonels, lieutenant-colonels and majors. This means that seventy-eight colonels, lieutenant-colonels and majors must be eliminated annually in this manner, say ten colonels, twenty-eight lieutenant-colonels and forty majors.[1]

With this arrangement, the length of service in each grade will be as follows:

Lieutenant-colonel	4 years (a trifle less)
Major	4½ years
Captains	10 years
First lieutenant	7½ years
Second lieutenant	5½ years (or a trifle less)

And the ages at promotion to the different grades respectively will be as follows, on the supposition that the average age on entering the service is 23 years

To a First lieutenant	28½ years
To a Captain	36 years
To a Major	46 years
To a Lieutenant-colonel	50½ years
To a Colonel	54½ years

The following table compares the length of service in each grade and the ages at promotion under this plan, with similar data under the plan proposed in the S. 7254—(The Elimination Bill).

TABLE VIII

	Length of Service in Years		Ages at Promotion to Next Higher Grade	
GRADE	Under this plan	Under S. 7254	Under this plan	Under S. 7254
Lieutenant-colonel	4	4	54½	54
Major	4½	6	50½	50
Captain	10	10	46	44
First lieutenant	7½	7	36	34
Second lieutenant	5½	4	28½	27

A brief examination will show that the plan will accomplish more than is expected of it, if it is put into full force at one time. Applying the plan gradually, so as to have it in full force at the end of five years, we secure the desired results as will be shown by the following examples:

Of the extra officers, in the grades of colonel, lieutenant-colonel and

1. The elimination bill (S. 7254) proposes to eliminate annually, 38 lieutenants, 44 captains, 14 majors, 6 lieutenant-colonels and 3 colonels, a total of 105.

This is for an organization of 3598 officers; for an organization of 4231 officers the total would be one hundred and twenty-three officers or forty-five more than contemplated by this plan.

major, the cavalry should get 11, 15 and 26 respectively. Adding these numbers to the numbers in each of these grades respectively at the present time (including those of the detailed staff that have already been absorbed) we find that the number of officers of cavalry in the three grades under consideration, immediately on the passage of the extra officers bill, will be as follows:

Colonels	27
Lieutenant-colonels	52
Majors	76

Of the 78 colonels, lieutenant-colonels and majors to be eliminated annually, 75/325 of 78=18 will be from the cavalry in order to give it its proper share of the promotions, and distributed to the three grades as follows:

Colonels	2.30
Lieutenant-colonels	6.46
Majors	9.24
	18.00

For the purposes of this illustration we will consider the colonels and lieutenant-colonels (2.30+6.46=8.76) in one class. If the plan is to be in full force at the end of five years

	Colonels and Lieutenant-Colonels Eliminated in
1/5×8.76=1.752	first year
2/5×8.76=3.504	second year
3/5×8.76=5.256	third year
4/5×8.76=7.008	fourth year
5/5×8.76=8.76	fifth year

Of the 25.56 majors promoted annually to fill vacancies created by natural causes (see Table VII) 45/195 of 25.56=5.9 are promoted from the cavalry. Consequently the number of majors promoted annually in the cavalry to fill vacancies created by this plan and by natural causes will be as follows:

During the 1st year 1.752+5.9= 7.652
During the 2d year 3.504+5.9 = 9.404
During the 3d year 5.256+5.9 =11.156
During the 4th year 7.008+5.9=12.908
During the 5th year 8.76 +5.9 =14.66
During the 6th year 8.76 +5.9=14.66
Etc Etc Etc

Let us now consider the case of Gray who is 47 (register of 1909) on the list of captains of cavalry. The extra officers bill will create 11+15+2=52 vacancies above him, and will move him up to 52−47=5 on the list of majors. There must be 76−5=71 vacancies created before he is promoted to his lieutenant colonelcy. Accordingly, he will get his promotion during his 6th year as a major.

Let us now consider the case of Fitch who is 247 (register of 1909) on the list of captains of cavalry. Of the 39.84 captains promoted annually to fill vacancies created by natural causes (see Table VII) 225/975 of 39.84=9.19 are promoted from the cavalry. Consequently, the number of captains promoted annually in the cavalry to fill vacancies created by this plan and by natural causes will be as follows:

During the 1st year one-fifth (18) − 9.19 = 12.79
During the 2nd year two-fifths (18) − 9.19 = 16.39
During the 3rd year three-fifths (18) − 9.19 = 19.99
During the 4th year four-fifths (18) − 9.19 = 23.59
During the 5th year five-fifths (18) − 9.19 = 27.19
During the 6th year (18) − 9.19 = 27.19
Etc Etc Etc.

The extra officers bill will create 52 vacancies above Fitch, placing him 247 − 52 = 195 on the list of captains of cavalry. Making proper allowance for the *captains of cavalry senior to Fitch* who will be eliminated *for natural causes* (see Table VII), it will be seen that he will get his promotion during the 9th year after the plan is put in operation. That he gets his promotion a few months before he completes his ten years as a captain, is due to the 52 files given him by the extra officers bill.[1]

In like manner we may determine the effect the plan will have on the promotion of any officer.

The following calculations will show the effect of this plan on the retired list.

Of the officers eliminated annually for natural causes (see Table VII) the following percentages in each grade are retired:[2]

Generals	88.9 per cent
Colonels	60.1 per cent
Lieutenant-Colonels	61.1 per cent
Majors	58.9 per cent
Captains	41.9 per cent
First Lieutenants	8.7 per cent
Second Lieutenants	8.7 per cent

Accordingly, the actual number retired in each grade annually for natural causes is as follows:

Generals	9.25 × 88.9 per cent = 8.22
Colonels	8.26 × 60.1 per cent = 4.96
Lieutenant-Colonels	8.05 × 61.1 per cent = 4.91
Majors	14.28 × 58.9 per cent = 8.41
Captains	30.28 × 41.9 per cent = 12.68
First Lieutenants	22.54 × 8.7 per cent = 1.86
Second Lieutenants	18.33 × 8.7 per cent = 1.59

1 The calculations with respect to the promotion of Captains Gray and Fitch are not **absolutely** accurate, since they do not take into account the slight gradual increase in the number of officers in the different grades due to the absorption of the detailed staff by the line. However, this will not materially affect the results.

2 These percentages are deduced from the data contained in Table VI of the letter of the Secretary of War accompanying S. 7254.

Of the 8.22 generals, 6.25 are brigadiers.

And the total numbers retired annually will be the above plus those retired under this plan with the grades of lieutenant-colonel, colonel and brigadier general. In each grade the number is as follows:

Brigadier Generals	6.25 + 10 = 16.25
Colonels	4.96 + 28 = 32.96
Lieutenant-Colonels	4.91 + 40 = 44.91
Majors	= 8.41
Captains	= 12.68
First Lieutenants	= 1.86
Second Lieutenants	= 1.59

Now, if we suppose the process of retirement to continue until the total number of deaths annually in each grade just equal the acquisitions from new retirements, we have the ultimate composition of the retired list, which can be arrived at in the following manner: From Tables VI and VIII of the letter of the Secretary of War accompanying S. 7254 it may be seen that it will take 31.96 years to attain the ultimate composition of the retired list in the grade of lieutenant, 25.64 years in the grade of captain, and 21.53 years, 18.73 years, 15.77 years and 12.25 years in the grades of major, lieutenant-colonel, colonel and brigadier-general, respectively.

Accordingly, the number of line officers ultimately in each grade of the retired list will be as follows:

Lieutenants	(1.86 + 1.59) × 31.96 =	110.26
Captains	12.68 × 25.64 =	325.11
Majors	8.41 × 21.58 =	181.06
Lieutenant-Colonels	4.91 × 18.73 = 91.86 40 × 21.53 = 861.20 953.06	953.06
Colonels	4.96 × 15.77 = 78.21 28 × 18.73 = 524.44 602.65	602.65
Brigadier-Generals	6.25 × 12.25 = 76.56 10 × 15.77 = 157.70 234.26	234.26
Major-Generals =		21.18
Lieutenant-Generals =		3.03
		2430.61

The following table compares the retired list of the line of the army as it will be ultimately under existing conditions, under the Elimination Bill (S. 7254), and under this scheme:

TABLE IX.

ULTIMATE COMPOSITION OF RETIRED LIST OF THE LINE OF THE ARMY.

Grade	Under Present Conditions	Under the Elimination Bill	Under this Scheme
Lieutenants	197.35	1,304.22	110.26
Captains	423.42	1,399.60	325.11
Majors	153.07	420.80	181.06
Lieutenant-Colonels	76.48	162.22	953.06
Colonels	320.99	103.29	602.65
Brigadier-Generals	86.75	76.67	234.26
Major-Generals	21.69	21.18	21.18
Lieutenant-Generals	4.34	3.03	3.03
Totals	1,284.09	3,491.01	2,430.61

In comparing the above lists it should be borne in mind that the second and third columns are the retired lists for an organization of 3,598 officers, while the fourth column is calculated on an organization of 4,264 officers. Calculating the second and third columns on the larger organization, the totals will be considerably greater, and probably will exceed 1,500 and 4,000 respectively.

The annual cost of each of these retired lists is as follows:

Under present conditions	$3,862,647.66
Under the Elimination Bill	5,108,963.57
Under this scheme	8,142,000.00

The last amount has been calculated under the supposition that officers in each grade are retired at the mean of the extreme ages for that grade. Before comparisons are made, the costs of the retired lists under present conditions and under the Elimination Bill should be increased to what they would become for a retired list recruited from an organization of 4,264 officers. This increase will be approximately 665/3598 of the amounts given above. After the increase is added the amounts will be:

Under present conditions	$4,577,633
Under the Elimination Bill	$6,054,646

The ultimate cost of the retired list under this scheme will thus be approximately $3,564,367 more than what it would be under existing conditions, and approximately $2,087,354 more than it would be under the Elimination Bill, considering an organization of 4,264 officers on the active list in each case.

However, since the officers on the active list will be younger under this plan, and consequently drawing smaller amounts as increased pay for length of service, the cost of the active list will be reduced about $270,000.

Of the officers ultimately on the retired list about 1,000 are under 64 years of age and subject to the call of the government at any time. They would form a military asset, which, in an emergency, will be second only in value to the active regular army and the organized militia.

By eliminating 9 colonels, 22 lieutenant-colonels and 35 majors (a total of 66 instead of 78), the length of service in each grade and ages at promotion are as follows:[1]

Grade	Length of Service in years	Age at Promotion to next higher grade
Lieutenant-Colonel.	4 (a trifle more)	57
Major.	5	53
Captain. 11		48
First Lieutenant.	8	37
Second Lieutenant.	6 (a trifle less)	29

As already stated, it is not practicable to determine how much the cost of the retired list will be reduced by reason of wholly retiring officers in all grades because of inefficiency due to their acts or omissions. It is possible, however, that the number thus wholly retired annually plus 66 (instead of 78) eliminated in the grades of colonel, lieutenant-colonel and major would be sufficient to give the promotion desired. If so, the ultimate annual cost of the retired list would be reduced by $855,405, making it $2,708,902 more than under present conditions, and $1,231,889 more than under the Eliminati n Bill

1 This is 57 less than would be eliminated under S. 7254 for a like [illegible]

REMOUNTS AND REMOUNT DEPOTS

While it is yet too early to judge as to the results and benefits following from the establishment of the one remount depot at Fort Reno and the plan of training young horses there for the mounted services, still there is no doubt that it is a step in the right direction and that the establishment of other depots in accordance with the plans of the quartermaster general will follow as funds are available.

Captain C. H. Conrad, Jr., Third Cavalry, is now in Virginia purchasing young horses to be sent to the remount depot, and incidentally studying the characteristics of Virginia horses and also the feasibility of establishing another remount depot in that section.

Regarding the adaptability of these young horses for our service after being trained and being fully developed, he writes:

"It is hoped to ultimately mount our cavalry on half-bred horses which are probably the best for our purposes in the world.

"The reputation of the Virginia half-bred is of the best and probably no horse is more widely or better known as a hunter. I believe that by putting in thoroughbred stallions with free service, that all the small farmers will breed horses for us and give the refusal of the colts at three years old for a price set the day the mare is covered.

"The colts would cost us about $125.00 when purchased and when broken and finished will be issued to the troops as five-year-olds at a cost of about $250.00 each. In time, if these ideas could be followed out, we would have as well mounted cavalry as any in the world. Now we are about as poorly mounted as we could be and rank with the armies of South America, in that respect, instead of with the great powers of Europe.

"If a remount depot is established in these parts, the government will eventually make entries in the many horse shows of Virginia and should give a cup to the breeder of the best mounts each year. It would take some three to five years to get such a plan into full operation and until that period has elapsed, it has occurred to me that the cavalry, through its association, should do something towards helping this movement.

"I think that the Cavalry Association could well afford to offer a cup, costing say, from $50.00 to $75.00, each year for the half-bred colt, three or four-year-old, winning the greatest number of blue ribbons in the shows of the Virginia Horse Show Association. There are ten or twelve fine shows in Virginia each year and as the people of the state are enthusiastic about this scheme, it would be an easy matter to have such a class made. All half-bred horse owners would try and win this cup, and the spectators, but more particularly the breeders, would become educated as to the kind of horse that we want.

"It can be easily arranged to have photographs of all of the blue ribbon winners and these could be reproduced in the *Cavalry Journal* and thus help educate the eye of the mounted officers by showing them a dozen or more photographs each year of typical cavalry horses.

"It appears to me that the Cavalry Association can well afford to spend $75.00 or even $100.00 each year for this pur-

pose. The fact that the U. S. Cavalry Association has offered a cup and the conditions under which it would be awarded can be made known with little trouble and expense."

The Executive Council would be pleased to hear from our members regarding this proposition as to giving a cup for the purpose indicated by Captain Conrad.

All the Continental countries of Europe, with a few minor exceptions, now encourage the breeding of suitable horses for their armies and to this end give prizes and offer other inducements, such as free service of stallions to farmers and breeders.

Of all of the great powers of Europe, England alone has done but little in this line and in consequence has encountered great difficulty in keeping her army supplied with proper mounts, especially in time of war. During the Boer War England purchased thousands of horses in this country, which many believe, under a strict interpretation of the laws of war, should not have been permitted.

The following extract from the *Broad Arrow* is one of many similar articles that have appeared in the British service journals on this subject.

"In his speech at Scarborough on the 18th ult., dealing with the question of horse breeding, the Earl of Carrington, President of the Board of Agriculture, pointed out that it was generally admitted that this industry was in a most unsatisfactory condition, and from statistics at hand there were 10,000 less foals dropped this year than last. We would suggest that the President of the Board of Agriculture urge on the members of the present government the absolute necessity of increasing the funds at present at the disposal of the Royal Commission on Horse Breeding. The £5000 granted for premiums is a mere dole, and we can fully understand that the commission cannot put forth any recommendation unless it has hopes that the government grant will be enormously increased. Lord Carrington is of opinion that a practical body should be created to deal with this subject of such paramount importance, and that this committee should be responsible to Parliament, instead of to no one, as is the present unsatisfactory arrangement, and that its members should be representatives of the War Office, the Board of Agriculture, practical horse dealers, and members of the various agricultural societies. However that may be, Lord Carrington must be well aware that without the prospect of a large amount of money being available, the work of such a committee would be of little value. At present the War Office will only buy remounts at five years, and then pays only £40 for an animal, whereas the farmer rightly maintains that unless he can sell his stock at three years such a price does not pay him. The result of this is that the War Office only gets the misfits of the horse breeding industry. No doubt in time of peace our requirements in military horse flesh can be easily met, but the reserve of good horses in this country suitable for an emergency is totally inadequate. Mr. Haldane has given no attention whatever to the supply of horses in time of war, yet of what use will his Expeditionary Force and Territorial Army be when mobilized if a sufficiency of horses are not available. Lord Carrington seems to consider that the French system, which he explained in his speech, of obtaining horses for military purposes is one that would be both satisfactory to the breeder and the government, in which case let us have no more idle talk, but let the Minister for Agriculture impress on the government that some scheme on the lines adopted in France should be set on foot in this country."

SELECTION VERSUS SENIORITY.

Two able and important articles under the above title have recently appeared in the Journal of the U. S. Infantry Association which are timely and are worthy of the attention of our thinking officers.

The first is by Major F. J. Kernan, General Staff, and the second by Major R. H. Noble, First Infantry.

This question of promotion by selection and elimination as well as that of reorganization, which are of such vital importance to the army, undoubtedly will be brought to the attention of Congress at the coming session and will be urged to a passage by the

War Department authorities. It is therefore well to discuss these matters in all their phases and, if possible, to bring forth arguments in favor of the best and wisest scheme that the army can evolve; to provide all possible safeguards for a fair and just scheme for selection—for promotion by selection *it is going to be* in some form—and to provide equal justice for the *efficient* officers of the army.

The Kernan article first gives a resumé of the laws and customs regarding promotion in the leading armies of Europe and also in Japan from which it appears that all have some system of promotion by selection, wholly or in part, and that nearly all have regulations for the compulsory retirement of their officers, either on reaching a certain age, on having served a certain number of years in a grade or on having reached a certain age in a particular grade. Some, noticeably in France, have restrictions as to the length of service required that an officer must serve in the different grades, in time of peace, before being promoted, which is not a bad idea.

From this resumé, Major Kernan draws the conclusion that all the leading armies of the world having recognized the principles of promotion by seniority and selection combined into a single system, that their experience is worth considering and argues that, for this and other reasons, we should adopt, in part at least, some scheme for promotion by selection, particularly in the higher grades. He argues that we have to a certain extent a system of selection in our service in procuring our officers to fill the lower grades, in detailing officers for service in the Ordnance Department and in the General Staff and for other positions for service with increased rank and for appointment of general officers.

He believes that, generaly, these laws and regulations have given satisfaction and have been well administered and states: "Therefore, it is concluded that a board of officers, acting under oath, and with the same sense of responsibility to the service which is habitually seen in courts martial, affords a safe and competent instrument for selecting officers for promotion."

He gives reasons, and good ones, why any scheme for promotion by selection should not include the lower grades and advocates that it should be confined to the grades of field officers. But, he says: "To allow, however, a margin of safety and also because the existing agencies for eliminating the unfit are more efficient below the grade of major than among the field officers, it is thought that it would be advisable to have seniority to continue the sole rule up to include the majors." He says there are but two valid objections to this plan of commencing with the grade of lieutenant colonel, one being the adverse sentiment of the army against any system of promotion by selection and the other arises from the peculiar nature of the office of lieutenant colonel, as his duties are, normally, light and his responsibilities not great, etc.

As to the promotion by selection of colonels, he truly says: "That no doubt can exist of the great importance to the army of this office and no argument can ever justify its commitment to the unfit. But this is what we sometimes do. The officer earlier described, who merely continues to live and avoid a court-martial and who has become progressively less and less useful, comes at last, under our present rule, to a regiment as to the predestined victim of his unfitness."

Major Noble, in his article, agrees with Major Kernan and gives additional reasons why promotion by selection should be confined to the higher grades, and submits a proposed bill to carry out his ideas.

In general terms, his bill provides that any officer shall be retired, on his own application, after forty years' service—foreign service to count double—provided that he must have served at least thirty years; that any colonel of the line who has served forty years, is sixty years of age or has served eight years in that grade may be retired; that when any colonel of the line is sixty-two years of age and when any officer of the line below the grade of colonel is fifty-eight years of age, he shall be retired; that when any officer below the grade of lieutenant colonel has served thirty-five years, or thirty-two years with eight years of foreign service, he shall, on his own application, be retired; that all officers below the grade of lieutenant colonel shal be examined for promotion and if found deficient, either physically or professionally, he shall be suspended from promotion for six months and then

be re-examined, when, if he fails physically, he shall be retired with the next higher rank and if he fails professionally he shall, if below the grade of major, be honorably discharged with one year's pay, and if above the grade of captain, he shall be debarred from further promotion; that, in time of peace, promotion to the grade of colonel in the line shall be by selection from the three senior lieutenant colonels of that arm who have successfully passed the prescribed physical and professional examination, the selection to be made by a board of two general officers and three colonels of that arm.

The bill also provides that all original appointments to the grade of second lieutenant shall be, in time of peace, temporary and probationary for two years, then to be examined as to habits, moral character, physical and mental ability, education and general fitness for the service, and that at least one of these two years must be either with his regiment or corps or at a government school.

There are other minor provisions relating to retirement, to the detail of retired officers, etc., but the above are the main features relating to elimination and selection.

In case we are to have promotion by selection and an improved method of eliminating those physically, mentally and morally disqualified, this bill will form a good basis from which may be evolved a more complete one for the purpose.

If practicable, a proviso should be incorporated in this bill, or any bill for the regulation of promotion in the army, that provides that the findings of all examining boards, boards for selecting officers for promotion or for retirement shall not be subject to revision, so that none of their findings may be waived and thereby prevent any personal or political influence being brought to bear to affect the results.

Again, this bill or any bill for promotion should provide some scheme for regulating promotion between the different arms and corps of the service. There is not a more fruitful source of discontent in the army than is this one of the inequalities of promotion.

We have all seen many officers promoted—on an increase of a particular arm or corps—before they had earned such promotion and before they had sufficient experience to properly fill the office to which promoted, to say nothing of the injustice and hard feeling caused in the other branches by seeing young and inexperienced officers put above them on the relative list. No officer should ever reach the grade of captain with less than five years' service, and ten would be better.

Of course, in time of war, this provision should not apply, as then the young officer gains experience rapidly and has many opportunities to show his worth and, if able and gallant, to prove that he is worthy of advanced promotion.

The following extracts from a letter from a general officer, formerly in the Infantry, are pertinent to this subject:

"You will know, I am sure, that I am as much interested in the welfare of the cavalry as I am the Infantry, and in every branch of the service I hope without prejudice, and will make every effort, as far as lies within my power, to promote the welfare of the entire service.

"There is not that united spirit in the Army that ought to exist, however, and measures for the Army are not always apparently dictated for the best interests of the service. Articles appear in the service papers which are ill-advised and only tend to create ill feeling. What the Army should do is to unite on a common policy for the efficiency of the entire service, without endeavoring to help one branch to the detriment of another.

"It is evident that the military committees, in both houses, are wide awake to a good many arguments which have not the best of foundations for certain legislation.

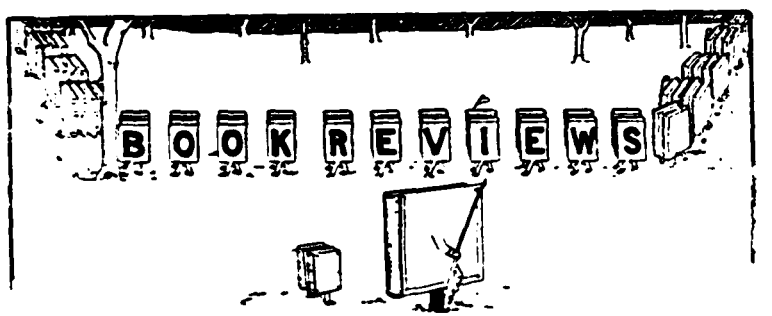
"There is no doubt that the Army should be increased, and yet I believe that if any one branch is helped first, it is recognized by most officers that the infantry is entitled to it. Their foreign service is harder and their strength is less according to their proportion than any other arm, unless it be the field artillery. I do not mean by this that the other branches should not also be increased.

"In any large increase for any one special arm, I also believe that there should be made a fair arrangement for the usual

promotion, that it should not be confined to the one branch, but equalized as far as possible.

"It remains for our service journals to do much towards shaping the spirit of fair legislation and discussion.

"In the course of my administration I am going to do the best I can for the common interest."



Introduction to Military Geography.* The assertion that an accurate knowledge of geography is of first importance to the military student, is so obviously a truism, that one seldom goes beyond the statement to consider how much is really involved therein. However well the average man may think he is posted on general geography, if he begins to test his knowledge, he is apt to find it painfully superficial. Even in the elementary matters of distance and direction, one is liable to harbor grave misconceptions. For example, the writer, until quite recently, was obsessed with the idea that the Isthmus of Panama was more nearly south of New Orleans than of New York and that the water routes from the southern parts of the United States to Bahia, Rio de Janeiro, or Buenos Ayres, were shorter than those, to the same parts, from Cadiz or Lisbon. If one's knowledge stands the test in such elementary matters, a reading of "An Introduction to Military Geography," by Brig. Gen. E. S. May, British Army, will probably convince him that he has made nothing more than a good beginning. The author

*"An Introduction to Military Geography" by Brigadier General E. S. May, C. B., C. M. G., General Staff Irish Command. Maps and Sketches. Hugh Rees, Ltd., London, 1909. Price 8 6, net.

plainly shows that accurate knowledge of physical configuration of the earth's surface, the distribution of land and water, the works of man, the locations of features, and their distances and directions from other features, is only the preface; and that climatology, acquaintance with local natural phenomena, such as tide, fogs and freshets, animal and vegetable products, flora and fauna, and sometimes even entomology, are equally parts of the subject, and of as great importance, in correctly estimating the possibilities of a region as a theater of operations.

The heads under which the subject, in general, is treated are natural and artificial frontiers, the influence of geographical features upon operations, the sea in relation to the operations of war, lines of communications, canals and waterways. These chapters may be read with profit by the military student of no matter what nationality. The special discussions, to which at least half of the book is devoted, are almost entirely confined to those regions of immediate importance to the British Empire. The construction of strategic railways in Asia Minor, the demarkation of spheres of influence in Persia, the three-fold characteristics of the Northwest Frontier of India, the guarantee of territorial integrity of Afghanistan, the creation of "buffer states," and of neutral zones, while of vital concern to the British officer, have been but academic interest to the American. The military geography of the United States receives but the briefest mention, and that of Canada but little more, and then only as her highways are considered as a line of communication with the Far East. The Panama Canal receives more attention, though the author seems a trifle skeptical as to the successful accomplishment of the enterprise—at least on the plans under which it is being constructed.

But if the book does not deal with the geographical subjects which are, or should be, of greatest interest to us, a careful study of General May's discussions will serve as a guide to such investigations. And their value cannot be overestimated. The importance of a fore-knowledge of the military geography of a theater should be brought home to us when we remember that it was ignorance of climatology (apparently) which sent our earlier expeditions into the tropics, burdened with clothing appropriate

to latitude 49°, and but inadequately protected against torrential rains; that it was ignorance of local conditions, upon Taylor's march through the sands of Southern Texas to the Rio Grande, which caused the tongues of his men to swell with thirst, when water in abundance was within three feet of the surface; and that it was ignorance of even the most obvious of geographical features which caused Scott to cumber his expedition to the Valley of Mexico, with a pontoon train, to the exclusion of much necessary food and ammunition, when his line of march, from Vera Cruz to the city, crossed no stream that was above the dignity of a rivulet.

The book contains 274 pages. The author's style is limpid and terse. The type is bold and clear. The maps are not up to the general excellence of the work in other respects and are inconveniently inserted in the body of the book instead of at the end.

Under the Red and Gold.* This is the title of the little book translated from the Spanish by Lieutenant Colonel F. L. Dodds, U. S. Army. This book will prove especial interest to all our military readers because of the mystery that has heretofore enveloped the story of the far-away Baler on the remote northeastern coast of Luzon.

Every American officer who has served in the islands has no doubt heard vague rumors of the noble defense made by the Spanish garrison in the church of Baler during the year following the occupation of the Philippines by the United States troops. To each of these the story told by Captain Cerezo will have an added value because of the exact facts of the siege related.

The fortitude and loyalty to their country exhibited by the Baler garrison must be, to the Spanish people, a source of deepest gratification and to all men an inspiration to patriotism and devotion to duty under conditions of hardship and deprivation.

* "Under the Red and the Gold—The Siege of Baler." Translated from the Spanish by Major F. L. Doods, U. S. Army. Franklin Hudson Publishing Co., Kansas City, Mo. Price $1.25.

The story is told in simple and forceful language and the simplicity only emphasizes the horrors of the three hundred and thirty-seven days siege sustained by the small detachment.

Every officer will find the book well worth reading.

C. O. S.

Strategy of the Franco-German War.* This book, just published, is a work on strategy for the military student in which tactical questions are not discussed. The material for the book is stated in the preface to have been collected from the official accounts, and, insofar as the statements of fact could be checked up in a short time, the book seems to be remarkably accurate throughout. The arrangement is unusually good, the first half of the book being devoted to French, the second part to German movements, each being in chronological order with the dates in the margin where they will catch the eye. This arrangement enables the student to look up any particular event or the events of any particular day with the greatest facility. In pockets in the covers are two good outline maps and march tables that show the exact dispositions of each army for each day. The student will find the French General Staff map of the vicinity of Metz, scale 1:200000, which can be obtained from the Secretary of the Army Service Schools, to be of great assistance in following the more important parts of the movements described. A great aid in locating the various corps on the map will be found in the small charts which are numerous throughout the book, showing the real and supposed positions of the armies on various dates.

As a frame-work on which to build a thorough study of the history of the Franco-German War this book will be found invaluable, while one who desires to learn merely the bolder outlines of this war and to get them clearly in his mind, will find no other work in English that, while keeping free from bewildering detail, will give so thorough a knowledge of the war as a whole. The work ends with Sedan. The author, whose style is easy, gives many valuable comments on the decisions of the opposing leaders, frequently pointing out other plays that were open to them at the time a particular decision was made.

On the whole the work is fully up to the standard of the series of military books recently brought out by the same publishers. It is printed in an attractive form with good type on a soft paper that is easy on the eyes, though impossible to use for marginal notes.

E.

Wa-fan-gou.* The Second volume of the history of the Russo-Japanese War, prepared in the historical section of the German General Staff, has been in the hands of the public some few months. This volume is given to the description of the battle of Wa-fan-gou and actions preliminary to Liao-Yan.

This will be but a brief review and will embrace only the first chapter, which is entirely devoted to a description of the battle which has been taken for the name of the second volume. From the first volume we are at once carried from Kuroki's army to the entire situation at the end of May. Little attention, practically none at all, is paid to the landing of the armies. A brief page is devoted to the question of the advisability of the southward movement at this time, and Kuropatkin's idea is given, and also that of Alexeiff, the ill-starred director of Russian events and oracle of poor advice.

A review of short space can hardly go into a discussion of the strategic sense or lack of sense displayed by sending Stackelberg southward at the time ordered. The comments at the end of the volume, which are but brief, being expressed in ten pages, seem to express the situation at the end of May

* "Lectures on the Strategy of the Franco-German War of 1870," by Brevet Major W. D. Bird, D. S. O. Hugh Rees, Ltd., London. Price 6/0 net.

** "The Russo-Japanese War." Wa-fan-gou and actions preliminary to Liao-yan. Prepared in the Historical Section of the German General Staff. Authorized Translation by Karl von Donat, late Lieutenant 33d Fusileer Regiment, German Army. Hugh Rees, Ltd., London. U. S. Cavalry Association Sole Agents for the United States. Price, $3.00.

and sum up all the results to be obtained by the movement as well as we have seen it done anywhere. Attention is invited, in this connection, to the report of one of our own observers, Captain Reichmann, pages 192-193. I cannot too strongly recommend to our officers the careful study of most of our own reports upon this war.

As regards Kuropatkin's idea of the situation at this time we now have the General's own work to turn to, as it has been published some two months. This work will be reviewed in some later issue of the JOURNAL but we wish to quote some from it here to illustrate the old axiom that two men cannot command an army. As long as there is a Halleck to interfere with movements, so long will the results of the generals in the field be small. A better example of the folly of not following One Man Power in war would be hard to find than this case of the unfortunate general (Kuropatkin) weighed down by that Old Man of the Sea, Alexeiff.

The following is from Alexeiff on March 1st, see Kuropatkin, Vol. 2, p. 208. "Separate operations against the fortress would only be really worth undertaking if the enemy could make certain of seizing it by a coup de-main, and the moment for this has passed. The land front is becoming more foridable every day, and, though not complete, the works are now well advanced; 200 additional guns have been mounted in Port Arthur itself, and more than forty at Chin-Chou; the strength of the garrison is being brought up by the reservists arriving from Trans-Baikalia, and the stocks of supplies are being increased. All the bays nearest the fortress, as well as the Port of Dalny, have been mined, and for the rest—the oft-proved stubbornness of the Russian soldier in defense can be relied on."

Turning to page 213 we find the following:

"At this time also, when the viceroy (Alexeiff) returned to Port Arthur after Admiral Makharoff's death, on April 13th, the weakness of the place began to be shown up, and Alexeiff's apprehensions as to its safety became acute. In a dispatch of May 16th he questioned whether the place would be able to hold out for more than two or three months, in

spite of all these steps taken to strengthen its defense." On April 25th the Chief of the Viceroy's staff telegraphed to me (Kuropatkin) that, owing to the inadequacy of the garrison, Alexeiff considered it essential that if the fortress were attacked, the field army should support it as energetically and rapidly as possible. Alexeiff was not singular in his pessemistic views, for Stossel also gave up hope of a successful defense of Port Arthur directly after he had so unnecessarily abandoned the Chin-chou position on May 27th. On the 28th, I received a telegram from him urging me to support him speedily and in strength. This opinion was again endorsed by Alexeiff, who telegraphed on June 5th that "Port Arthur cannot be called a storm-proof fortress, and it is a question whether it can even stand a siege of the length indicated in my telegram of May 16th."

Such a volte-face must have had its depressing influence of indecision upon Kuropatkin. And we are fully convinced that this feature of intervention with Kuropatkin was not ended with the fizzle of Alexeiff, but was continued throughout the war by a vacillating monarch too weak to court martial and shoot general officers who have been no better than traitors, even though we measure their culpability by incompetence rather than by intention. While I have no desire to extol Kuropatkin yet I find in my reviews of this war that it would require only a little more of the personal narrative to constitute an apology for "The Unfortunate General." Yet I believe that history will show Kuropatkin to have deserved a beter fate than the one that has befallen him.

The discription of the battle is largely a tactical discussion, and presumably we have the forces and their distribution as accurately as can be gotten. We find some difference in authorities as to numbers on both sides. But it appears that Stackleberg had a force of somewhere in the neighborhood of 30,000 men in the battle of Wa-fan-gou, called by some the battle of Telissu. I take it that the Japanese outnumbered him by somewhere near ten thousand men, though we find many contending that the forces were about equal.

This description gives the divisions and brigades engaged, but not the actual fighting force of the Japs.

If it should be asked what most struck me in this description I would say that the lack of a combatant character on the part of the Russian General. Had Grant, with his doggedness and firm belief in the idea of pushing harder when things are at a standoff, been in command, Wa-fan-gou would to my belief have been a different story. A determined stand against the odds on the Japanese left would have enabled the right to push the Japanese right back and the Russians might have had a temporary victory to cheer them up with its morale in place of the disheartening retreat under sense of failure. Of course the gain would have been but temporary. The Russian forces in Manchuria were not large enough at this time to play on interior lines and Kuroki could at any time offset any temporary advantage south of Liao-Yan by pressing forward against the weak lines in front of him.

In this battle we have a wonderful example of how to use cavalry and just as wonderful a one of how not to use it. Unquestionably the advance of the Japanese Cavalry brigade on the extreme Japanese right saved the day for the right wing of the Japanese Army. Had the Russian Cavalry done as well on their right the battle would have been a draw. But the incompetence of the Russian Cavalry was criminal. One would think that watchers would have sense enough to get on high hills to overlook surrounding country. Even years ago the coast inhabitants of the Philippines knew enough to build watch towers from which to look for Moro scows. Seemingly the Filipino would make a better cavalryman than a Cossack. I consider the inactivity of the Russian Cavalry on the Russians right the main cause of the disaster. Had Stackelberg known what was coming there he could have met the force with his reserve detachments and held them while his left fought on to victory, but the demoralization of an unknown force striking one's flank was took great for the "stubbornness" of the Russian soldier and Stackelberg gave the order to retreat while the left yet had a chance to win. If cavalry cannot

find brigades of troops within such distance that a night's march will place them on the flank of a position, then it does not deserve the name of cavalry. Certainly to a careful military student this battle is one of the most fruitful of the world's history in examples of the need of good cavalry and plenty of it.

Again we find on page 21 the following regarding the actions in the mountains around Siu-yan:

"When the Russians abandoned the heights south of Sui-yan, General Marui, hearing the brisk fire of Asada's brigade had also advanced, one of his batteries being just in time to intervene west of Sui-yan. The enemy was, however, not pursued vigorously, the weak Japanese Cavalry being no match for the enemy, and the other troops too tired, on account of fatiguing marches over the bad mountain paths (some portions had already covered 25 miles). The Japanese contented themselves with occupying the town, and merely pushed forward outposts along the main approaches." This is a full explanation of why more fruit was not gathered by the Japanese throughout the entire war.

As for the front occupied by Stackelberg for this defensive action it would appear it was not too wide or too narrow, though we find the following in the *London Times History* reviewed in this JOURNAL some issues ago): "General Stackelberg appears to have occupied the very restricted front allotted to an army corps by the Russian Regulations and to have fought an old world battle in an old world manner." It may appear to some that Stackelberg played on too small a board. But four and three quarters miles of front for 30,000 men is not a very large allowance if we are playing our war games correctly. If our divisions are to occupy but one and one-half miles, can we say Stackelberg was too restricted when his force was distributed as mentioned above. Of course he was too restricted when we consider his cavalry flanking forces, but his orders to the cavalry on his right were sufficient to have prevented the disaster had he been possessed of true cavalry. So I fail to see that he was much in error in this regard. His reserve could have held the right had he been informed of the trouble there soon enough to pre-

vent its demoralizing influence. And it would seem strong tactical sense to keep forces well in hand in the presence of superior numbers.

The German account pays quite a compliment to Colonel Harvard, one of our observers, by quoting the Russian losses from his report. And history is now giving the lie to the partisan statements of the *London Times*. But as stated in my review of this history, it was partisan, written by an ally of one of the belligerent powers, and is throughout highly colored as newspaper accounts will always be. But aside from this partisanship and the desire to make all things appear favorable to England's ally, the wish of the compiler to say biting and sarcastic remarks leads to many and many a truth and many and many a military moral. As a strategical study it will be many days before we have such masterly presentations as we find in the *Times History*.

Ian Hamilton falls into the same error as to losses as does the *Times*, but at that time it may have been natural to believe the Russian losses were heavy, because 30,000 men do not ordinarily retreat without losing some large per cent. of their force. Then probably Hamilton was unduly impressed by the old grave digger. It will be remembered that he constructed his idea of the battle from the account of the grave digger.

The reader is carried through the battle with clearness and mistakes arise before his eyes that he can see without having them pointed out. The maps are good and the names found with little difficulty. It is a good map problem to follow the various movements previous to the battle and the extended front and the work of the advanced parties.

The names in the text can all be found on the maps though one is apt to learn self restraint in finding some of them. Chapter II is given to the discussion of events in the southwestern portion of the theater of war until the beginning of August, 1904. The remainder of the work will be reviewed in a subsequent issue of the JOURNAL. Only in closing we might say that the present volume occupies as high a position as the first volume, and that it is the main work on the war to be bought and studied by our officers.

WHITE.

Publisher's Notices.

The attention of our members and readers is called to the several new advertisements in this number of the CAVALRY JOURNAL. The particular attention of our Fort Riley members is invited to those of the Junction City firms. It is to their interest to patronize them not only because they are reliable and responsible but in so doing you help the JOURNAL.

J. C. TEITZEL.

This well known bootmaker has had over twenty five year's experience in making boots for the officers of the mounted services at Fort Riley, so that his reputation has grown as the garrisons change.

His work is well known all over the army.

THE M. L. CORYELL GROCERY.

Mr. Coryell is well known to his many Fort Riley patrons. He guarantees quick service and courteous treatment. He asks for a liberal share of the army trade.

CENTRAL NATIONAL BANK.

For over twenty-five years, this well known bank has been patronized by the army. It guarantees fair and liberal service.

THE B. ROCKWELL GRAIN AND MERCHANDISE CO.

This, one of the oldest firms in the west, has renewed its

advertisement. For a cavalryman not to know "Rockwell's" is to indicate that he is not a veteran as all drift to Fort Riley at some time in their career.

W. C. DUMM.

The attention of our members is called to this firm who can supply everything in the line of furniture, rugs and draperies.

THE SMITH PREMIER TYPEWRITER.

While typewriters do not become cheaper from year to year, they become better and each succeeding year brings more improvements and better machines.

The officers all over the army use typewriters but more particularly the student officers at the service schools. These will do well to examine the Smith Premier before purchasing.

Magazine Department.

MAGAZINE DEPARTMENT.

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Army and Navy Life and the United Service
An Illustrated Monthly Magazine.
15c. a Copy. $1.50 a year.
150 Nassau St. NEW YORK.

Army and Navy Register
(The U. S. Military Gazette)
Published by
ARMY AND NAVY PUBLISHING CO.,
Bond Building, Washington, D. C.
1 yr. $3; 6 Mo. $2; 3 Mo. $1.25; 1 Mo 50c.
Foreign Postage $1.00 per year extra.

Journal of the Military Service Institution of the United States
Governor's Island, NEW YORK.
50c. a Copy. $2.00 a Year.

Army and Navy Journal
Gazette of The Regular and Volunteer Forces
Published Weekly
Single Copies Fifteen Cents. $6.00 per year
NEW YORK.

Proceedings of the
United States Naval Institute.
Published Quarterly by the Institute.
ANNAPOLIS, MD.
$1.00 A Copy. $3.50 a Year.

More National Guard News is published in
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Than in any other military publication.
To keep posted on the activity in the Organized Militia you must read it.
$1.00 per year. Columbus, Ohio.

JOURNAL OF THE
United States Artillery.
Published Under Supervision of the School Board of the Artillery School.
FORT MONROE, VA.
50 Cents a Copy. $2.50 a Year.

The Military Surgeon
Published Monthly by the Association of Military Surgeons of the United States.
At CARLISLE, PA.
$3.50 a Year. 35 Cents a Copy.

U. S. Infantry Journal.
PUBLISHED BI-MONTHLY BY
U. S. INFANTRY ASSOCIATION,
WASHINGTON, D. C.
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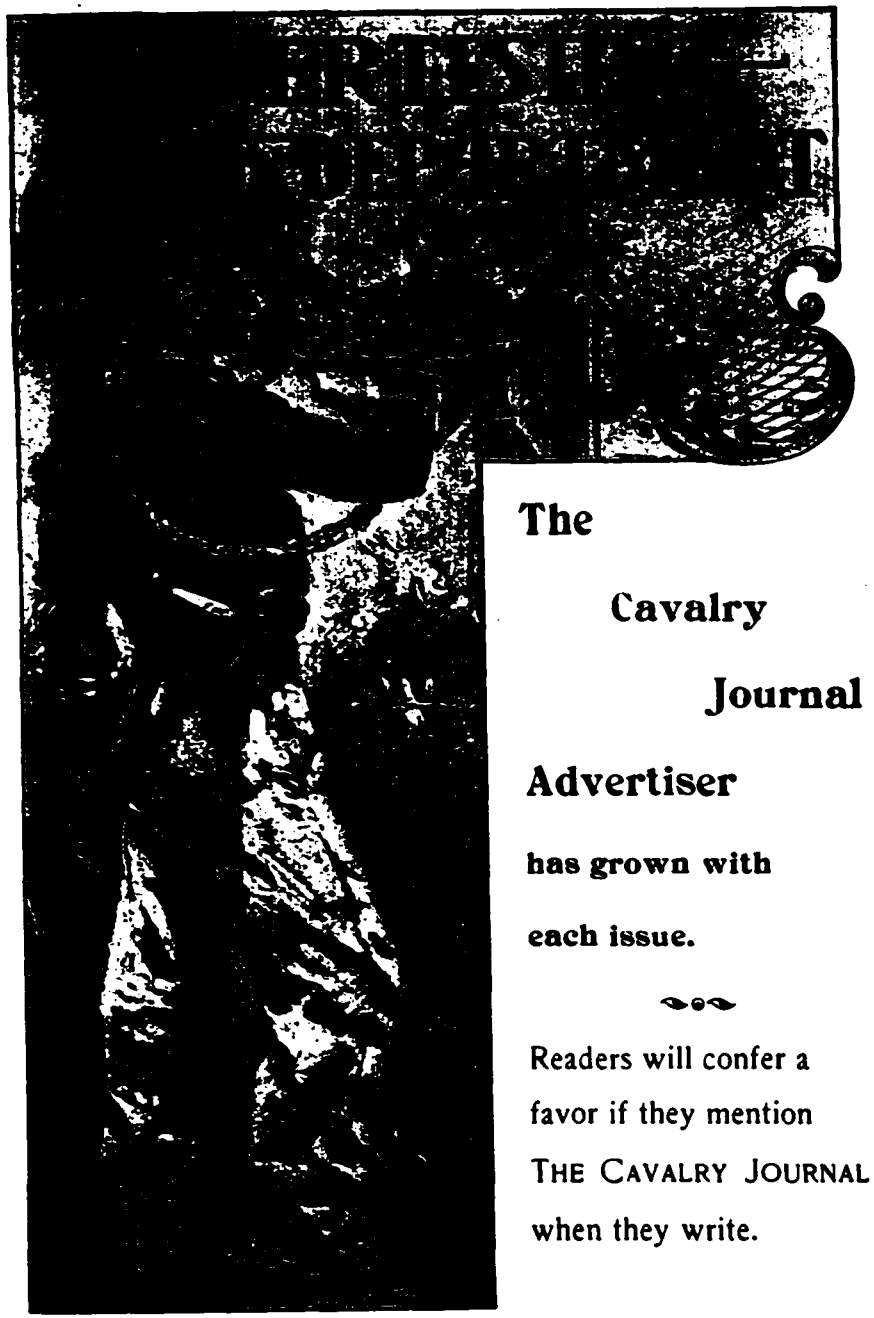

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JOURNAL OF THE U. S. CAVALRY ASSOCIATION

November, 1909.

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VOL. XX. NOVEMBER, 1909. No. 75.

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OF THE

United States Cavalry

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EDITOR.

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NOTICE!

The next Regular Annual Meeting of the U. S. Cavalry Association will be held in Grant Hall, at Fort Leavenworth, Kansas, at 8:00 P. M. on Monday, January 17, 1910, as provided in Section 1, Article VI, of the Constitution of the Association.

A list of the members of the Association who are on duty at Fort Leavenworth will be found on the back hereof.

Please fill out, sign and return the proxy hereon below and mail the same to the Secretary without delay. Cavalry officers on duty with their regiments can save trouble by handing the same to the regimental member of the Sub-Council.

Very respectfully,

EZRA B. FULLER,
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.... *1909.*

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For the improvement of the Journal of the Association or for the good of the cavalry service generally, I suggest the following:

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All communications should be addressed to the

SECRETARY U. S. CAVALRY ASSOCIATION,

Fort Leavenworth, Kansas.

JOURNAL

OF THE

United States Cavalry Association.

VOL. XX. NOVEMBER, 1909. No. 75.

BATTLE OF GETTYSBURG.

(Continued.)

At four o'clock on the morning of the 3d I was awakened by General Gibbons pulling me by the foot, and saying, "Come, don't you hear that?" I sprang to my feet. Where was I? A moment and my dead senses and memory were alive again, and the sound of brisk firing of musketry to the front and right of the Second Corps, and over at the extreme right of our line, where we heard it last in the night, brought all back to my memory. We surely were on the field of battle; and there were palpable evidences to my senses that today was to be another of blood. Oh, for a moment the thought of it was sickening to every sense and feeling! But the motion of my horse as I galloped over the crest a few minutes later, and the serene splendors of the morning now breaking through the rifted clouds and spreading over all the landscape, soon reassured me.

I found a sharp skirmish going on in front of the right of the Second Corps, between our outposts and those of the enemy; but save this—and none of the enemy but his outposts were in sight—all was quiet in all that part of the field. On the extreme right of the line the sound of musketry was quite heavy; and this, I learned, was brought on by the attack of the Second

Division of the Twelfth Corps—General Geary—upon the enemy in order to drive him out of our works, which he had sneaked into yesterday, as I have mentioned. The attack was made at the earliest moment of the morning where it was light enough to discern objects to fire at. The enemy could not use the works, but were confronting Geary in woods, and had the cover of many rocks and trees; so the fight was an irregular one, now breaking out and swelling to a vigorous fight, now subsiding to a few scattering shots; and so it continued by turns until the morning was well advanced, when the enemy was finally wholly repulsed and driven from the pits, and the right of our line was again re-established in the place it first occupied. The heaviest losses the Twelfth Corps sustained in all the battle occurred during this attack; and they were here quite severe. I heard General Meade express dissatisfaction at General Geary for making this attack, as a thing not ordered and not necessary, as the works of ours were of no intrinsic importance, and had not been captured from us by a fight, and Geary's position was just as good where he was during the night. And I heard General Meade say that he sent an order to have the fight stopped; but I believe the order was not communicated to Geary until after the repulse of the enemy. Later in the forenoon the enemy again tried to carry our right by storm. We heard that Ewell had sworn an oath that he would break our right. He had Stonewall Jackson's corps, and possibly imagined himself another Stonewall; but he certainly *hankered* after the right of our line, and so up through the woods, and over the rocks, and up the steeps, he sent his storming parties. Our men could see them now in the daytime. But all their efforts were fruitless, save in one thing—slaughter to his own men. These assaults were made with spirit and determination; but as the enemy would come up, our men, lying behind their secure defenses, would just singe them with a blaze of their muskets, and riddle them, as a hailstorm the tender blades of corn. Their loss was very heavy indeed, here; ours but trifling. I regret that I cannot give more of the details of this fighting upon the right; it was so determined upon the part of the enemy, both last night and this morning—so successful to us. About all that I actually saw of it during its progress was the smoke, and I heard the discharges. My information is derived from the officers who were personally in it. Some of our heavier artillery assisted our infantry in this by firing, with the pieces elevated, far from the rear, over the heads of our men, at a distance from the enemy of two miles, I suppose. Of course they could have done no great damage. It was nearly eleven o'clock that the battle in this part of the field subsided, not to be again renewed. All the morning we felt no apprehension for this part of the line; for we knew its strength, and that our troops engaged, the Twelfth Corps and the First Division, Wadsworth's, of the First, could be trusted.

For the sake of telling one thing at a time, I have anticipated events somewhat, in writing of this fight upon the right. I shall now go back to the starting point—four o'clock this morning, and, as other events occurred during the day second to none in the battle in importance, which I think I saw as much of as any man living, I will tell you something of them, and what I saw, and how the time moved on. The outpost skirmish that I have mentioned soon subsided. I suppose it was the natural escape of the wrath which the men had during the night hoarded up against each other, and which, as soon as they could see in the morning, they could no longer contain, but must let it off through their musket barrels at their adversaries. At the commencement of the war such firing would have awaked the whole army, and roused it to its feet and to arms; not so now. The men upon the crest lay snoring in their blankets, even though some of the enemy's bullets dropped among them, as if bullets were harmless as the drops of dew around them. As the sun arose today the clouds became broken, and we had once more glimpses of sky and fits of sunshine—a rarity—to cheer us. From the crest, save to the right of the Second Corps, no enemy, not even his outposts, could be discovered along all the position where he so thronged upon the Third Corps yesterday. All was silent there. The wounded horses were limping about the fields; the ravages of the conflict were still perfectly visible—the scattered arms and the ground thickly dotted with the dead—but no hostile foe.

The men were roused early, in order that their morning meal might be out of the way in time for whatever should occur. Then ensued the hum of an army, not in ranks, chatting in low tones, and running about and jostling among each other, rolling and packing their blankets and tents. They looked like an army of rag-gatherers while shaking these very useful articles of the soldier's outfit, for you must know that rain and mud in conjunction have not had the effect to make them very clean, and the wear and tear of service have not left them entirely whole. But one could not have told by the appearances of the men that they were in battle yesterday and were likely to be again today. They packed their knapsacks, boiled their coffee, and munched their hard bread, just as usual—just like old soldiers, who know what campaigning is; and their talk is far more concerning their present employment—some joke or drollery—than concerning what they saw or did yesterday.

As early as practicable the lines all along the left are revised and re-formed, this having been rendered necessary by yesterday's battle, and also by what is anticipated today. It is the opinion of many of our generals that the enemy will not give us battle today, that he had enough yesterday; that he will be heading towards the Potomac at the earliest practicable moment, if he has not already done so. But the better and controlling judgment is that he will make another grand effort to pierce or turn our lines; that he will either mass and attack the left again, as yesterday, or direct his operations against the left of our center, the position of the Second Corps, and try to sever our line. I infer that General Meade was of the opinion that the attack today would be upon the left—this from the disposition he had ordered. I know that General Hancock anticipated the attack upon the center.

The dispositions today upon the left are as follows: The Second and Third Divisions of the Second Corps are in the positions of yesterday; then on the left came Doubleday's—the Third Division and Colonel Stannard's Brigade of the First Corps; then Caldwell's—the First Division of the Second Corps; then the Third Corps, temporarily under the command of Hancock,

since Sickles' wound. The Third Corps is upon the same ground in part, and on the identical line where it first formed yesterday morning, and where, had it stayed instead of moving out to the front, we should have many more men today, and should not have been upon the brink of destruction yesterday. On the left of the Third is the Fifth Corps, with a short front and deep line; then comes the Sixth Corps, all but one brigade, which is sent over to the Twelfth. The Sixth, a splendid Corps, almost intact in the fight of yesterday, is the extreme left of our line, which terminates to the south of Round Top, and runs along its western base, in the woods, and thence to the Cemetery. This corps is burning to pay off scores made on the fourth of May, then back of Fredericksburg. Note well the position of the Second and Third Divisions of the Second Corps—it will become important. There are nearly six thousand men and officers in these two divisions here upon the field. The losses were quite heavy yesterday—some regiments are detached to other parts of the field—so all told there are less than six thousand men now in the two divisions, who occupy a line of about a thousand yards. The most of the way along this line upon the crest was a stone fence, constructed from small rough stones, a good deal of the way badly fallen down; but the men had improved it and patched it with rails from the neighboring fences, and with earth, so as to render it in many places a very passable breastwork against musketry and flying fragments of shells. These works are so low as to compel the men to kneel or lie down generally to obtain cover. Near the right of the Second Division, and just by the little group of trees that I have mentioned there, this stone fence made a right angle, and extended thence to the front, about twenty or thirty yards, where with another less than a right angle it followed along the crest again. The lines were conformed to these breastworks and to the nature of the ground upon the crest, so as to occupy the most favorable places—to be covered, and still be able to deliver effective fire upon the enemy should he come there. In some places a second line was so posted as to be able to deliver its fire over the heads of the first line behind the works; but such formation was not practicable

all of the way. But all the force of these two divisions was in line, in position, without reserves, and in such manner that every man of them could have fired his piece at the same instant. The division flags—that of the Second Division being a white trefoil upon a square blue field, and of the Third Division a blue trefoil upon a white rectangular field—waved behind the divisions at the points where the generals of divisions were supposed to be. the brigade flags, similar to these, but with a triangular field. were behind the brigades; and the national flags of the regiments were in the lines of the regiments. To the left of the Second Division, and advanced something over a hundred yards. were posted a part of Stannard's brigade, two regiments or more. behind a small bush-crowned crest that ran in a direction oblique to the general line. These were well covered by the crest. and wholly concealed by the bushes, so that an advancing enemy would be close upon them before they could be seen. Other troops of Doubleday's division were strongly posted in rear of these in the general line.

I could not help wishing all the morning that this line of the divisions of the Second Corps were stronger; it was, so far as numbers constitute strength, the weakest part of our whole line of battle. What if, I thought, the enemy should make an assault here today, with two or three heavy lines—a great overwhelming mass—would he not sweep through that thin six thousand? But I was not General Meade, who alone had power to send other troops there; and he was satisfied with that part of the line as it was. He was early on horseback this morning, and rode along the whole line, looking to it himself, and with glass in hand sweeping the woods and fields in the direction of the enemy, to see if aught of him could be discovered. His manner was calm and serious, but earnest. There was no arrogance of hope, or timidity of fear, discernible in his face; but you would have supposed he would do his duty conscientiously and well, and would be willing to abide by the result. You would have seen this in his face. He was well pleased with the left of the line today, it was so strong with good troops. He had no apprehension for the right, where the fight was now going on.

on account of the admirable position of our forces there. He was not of the opinion that the enemy would attack the center, our artillery had such sweep there, and this was not a favorite point of attack with the enemy; besides, should he attack the center, the general thought he could reinforce it in good season. I heard General Meade speak of these matters to Hancock and some others, at about nine o'clock in the morning, while they were up by the line, near the Second Corps.

No further changes of importance, except those mentioned, were made in the disposition of the troops this morning, except to replace some of the batteries that were disabled yesterday, by others from the artillery reserve, and to brace up the lines well with guns, wherever there were eligible places, from the same source. The line is all in good order again, and we are ready for general battle.

Save the operations upon the right, the enemy, so far as we could see, was very quiet all the morning. Occasionally the outposts would fire a little, and then cease. Movements would be discovered which would indicate the attempt on the part of the enemy to post a battery; our Parrotts would send a few shells to the spot, then silence would follow. At one of these times a painful accident happened to us, this morning. First Lieutenant Henry Ropes, Twentieth Massachusetts, in General Gibbon's division, a most estimable gentleman and officer, intelligent, educated, refined, one of the noble souls that came to the counutry's defense, while lying at his post with his regiment, in front of one of the batteries, which fired over the infantry, was instantly killed by a badly made shell, which, or some portion of it, fell but a few yards in front of the muzzle of the gun. The same accident killed or wounded several others. The loss of Ropes would have pained us at any time, and in any manner; in this manner his death was doubly painful.

Between ten and eleven o'clock, over in a peach orchard in front of the position of Sickles yesterday, some little show of the enemy's infantry was discovered. A few shells scattered them; they again appeared, and, it becoming apparent that they were only posting a skirmish line, no further molestation was

offered them. A little after this some of the enemy's flags could be discerned over near the same quarter, above the top, and behind a small crest of a ridge. There seemed to be two or three of them—possibly they were guidons—and they moved too fast to be carried on foot. Possibly, we thought, the enemy is posting some batteries there. We knew in about two hours from this time better about the matter. Eleven o'clock came. The noise of battle has ceased upon the right; not a sound of a gun or musket can be heard on all the field. The sky is bright with only the white fleecy clouds floating over from the west; the July sun streams down its fire upon the bright iron of the muskets in stacks upon the crest, and the dazzling brass of the Napoleons. The army lolls and longs for the shade, of which some get a hand's breadth from a shelter tent stuck upon a ramrod. The silence and sultriness of a July noon are supreme.

Now it so happened that just about this time of day a very original and interesting thought occurred to General Gibbon and several of his staff: that it would be a very good thing, and a very good time, to have something to eat. When I announce to you that I had not tasted a mouthful of food since yesterday noon, and that all I had had to drink since that time, but the most miserable, muddy, warm water, was a little drink of whiskey that Major Biddle, General Meade's aid-de-camp, gave me last evening, and a cup of strong coffee that I gulped down as I was first mounting this morning, and, further, that, save the four or five hours in the night, there was scarcely a moment since that time but that I was in the saddle, you may have some notion of the reason of my assent to this extraordinary proposition. Nor will I mention the doubts I had as to the feasibility of the execution of this very novel proposal, except to say that I knew this morning that our larder was low; not to put too fine a point upon it, that we had *nothing* but some potatoes and sugar and coffee in the world. And I may as well say here, that of such, in scant proportions, would have been our repast, had it not been for the riding of miles by two persons, one an officer, to procure supplies; and they only succeeded in getting some few chickens, some butter, and one huge loaf of bread, which last was bought

of a soldier, because he had grown faint in carrying it, and was afterwards rescued with much difficulty, after a long race, from a four-footed hog which had got hold of and had actually eaten a part of it. "There is a divinity," etc. Suffice it, this very ingenious and unheard of contemplated proceeding, first announced by the general, was accepted, and at once undertaken by his staff. Of the absolute quality of what we had to eat, I could not pretend to judge, but I think an unprejudiced person would have said of the bread, that it was good; so of the potatoes, before they were boiled. Of the chickens, he would have questioned their age, but these were large and in good *running* order. The toast was good, and the butter—there were those who, when coffee was given them, called for tea, and *vice versa*, and were so ungracious as to suggest that the water that was used in both might have come from near a barn. Of course it did not. We all came down to the little peach orchard where we had stayed last night, and, wonderful to see and tell, ever mindful of our needs, had it all ready, had our faithful John. There was an enormous pan of stewed chickens, and the potatoes and toast, all hot, and the bread and butter, and tea and coffee. There was satisfaction derived from just naming them all over. We called John an angel, and he snickered and said he "knowed" we'd come. General Hancock is of course invited to partake, and without delay we commenced operations. Stools are not very numerous—two in all—and these the two generals have by common consent. Our table was the top of the mess chest. By this the generals sat; the rest of us sat upon the ground, cross-legged like the picture of a smoking Turk, and held our plates upon our laps. How delicious was the stewed chicken! I had a cucumber pickle in my saddle-bags, the last of a lunch left there two or three days ago, which George brought, and I had half of it. We were just well at it, when General Meade rode down to us from the line, accompanied by his staff, and by General Gibbon's invitation they dismounted and joined us. For the general commanding the Army of the Potomac, George, by an effort worthy of the person and the occasion, finds an empty cracker-box for a seat. The Staff officer must sit upon

the ground with the rest of us. Soon Generals Newton and Pleasanton, each with an aide, arrive. By an almost superhuman effort a roll of blankets is found, which, upon a pinch, is long enough to seat these generals both, and room is made for them. The aides sit with us. And, fortunate to relate, there was enough cooked for us all, and from General Meade to the youngest second lieutenant we all had a most hearty and well-relished dinner. Of the "past" we were "secure." The generals ate, and, after, lighted cigars, and under the flickering shade of a very small tree discoursed of the incidents of yesterday's battle, and of the probabilities of today. General Newton humorously spoke of General Gibbon as "this young North Carolinian," and how he was becoming arrogant and above his position because he had commanded a corps. General Gibbon retorted by saying that General Newton had not been long enough in such a command, only since yesterday, to enable him to judge of such things.

General Meade still thought that the enemy would attack his left again today, towards evening; but he was ready for them. General Hancock, that the attack would be upon the position of the Second Corps. It was mentioned that General Hancock would again resume command of the Second Corps from that time, so that General Gibbon would again return to the Second Division. General Meade spoke of the Provost Guards —that they were good men, and that it would be better today to have them in the ranks than to stop stragglers and skulkers, as these latter would be good for but little even in the ranks; and so he gave the order that all the Provost Guards should at once temporarily rejoin their regiments. Then General Gibbon called up Captain Farrel, First Minnesota, who commanded the Provost Guard of his division, and directed him for that day to join the regiment. "Very well, sir," said the captain, as he touched his hat and turned away. He was a quiet, excellent gentleman, and thorough soldier. I knew him well, and esteemed him. I never saw him again. He was killed in two or three hours from that time, and over half of his splendid company were either killed or wounded.

And so the time passed on, each general now and then dispatching some order or message by an officer or orderly, until about half past twelve, when all the generals, one by one, first General Meade, rode off their several ways; and General Gibbon and his staff alone remained. We dozed in the heat, and lolled upon the ground, with half open eyes. Our horses were hitched to the trees, munching some oats. A great lull rests upon all the field. Time was heavy, and for want of something better to do, I yawned and looked at my watch; it was five minutes before one o'clock. I return my watch to its pocket, and thought possibly that I might go to sleep, and stretched myself upon the ground accordingly. My attitude and purpose were those of the general and the rest of the staff.

What sound was that? There was no mistaking it! The distinct, sharp sound of one of the enemy's guns, square over to the front, caused us to open our eyes and turn them in that direction, when we saw directly above the crest the smoke of the bursting shell, and heard its noise. In an instant, before a word was spoken, as if that was the signal gun for general work, loud, startling, booming, the report of gun after gun, in rapid succession, smote our ears, and their shells plunged down and exploded all around us. We sprang to our feet. In briefest time the whole line of the enemy to the west was pouring out its thunder and its iron upon our devoted crest. The wildest confusion for a few moments obtained among us. The shells came bursting all about. The servants ran terror-stricken for dear life, and disappeared. The horses hitched to the trees, or held by the slack hands of orderlies, neighed out in fright, and broke away and plunged riderless through the fields. The general at the first had snatched his sword, and started on foot to the front. I called for my horse; nobody responded. I found him tied to a tree nearby, eating oats, with an air of the greatest composure, which, under the circumstances, even then struck me as exceedingly ridiculous. He alone, of all beasts or men near, was cool. I am not sure but that I learned a lesson then from a horse. Anxious alone for his oats, while I put on the bridle and adjusted the halter, he

delayed me by keeping his head down, so I had time to see one of the horses of our mess wagon struck and torn by a shell. The pair plunge—the driver has lost the rein; horses, driver, and wagon go into a heap by a tree. Two mules close at hand, packed with boxes of ammunition, are knocked all to pieces by a shell.

General Gibbon's groom has just mounted his horse, and is starting to take the general's to him, when the flying iron meets him and tears open his breast; he drops dead, and the horses gallop away. No more than a minute since the first shot was fired, and I am mounted and riding after the general. The mighty din that now rises to heaven and shakes the earth is not all of it the voice of the rebellion; for our guns, the guardian lions of the crest, quick to awake when danger comes, have opened their fiery jaws and begun to roar—the great hoarse roar of battle. I overtook the general half way up to the line. Before we reach the crest his horse is brought by an orderly. Leaving our horses just behind a sharp declivity of the ridge, on foot we go up among the batteries. How the long streams of fire spout from the guns! how the rifled shells hiss! how the smoke deepens and rolls! But where is the infantry? Has it vanished in smoke? Is this a nightmare or a juggler's devilish trick? All too real. The men of the infantry have seized their arms, and behind their works, behind every rock, in every ditch, wherever there is any shelter, they hug the ground, silent, quiet, unterrified, little harmed. The enemy's guns, now in action, are in position at their front of the woods, along the second ridge that I have before mentioned, and towards their right, behind a small crest in the open field, where we saw the flags this morning. Their line is some two miles long, concave on the side toward us, and their range is from one thousand to eighteen hundred yards. A hundred and twenty-five guns of the enemy, we estimate, are now active, firing twenty-four pound, twenty, twelve, and ten-pound projectiles, solid shot and shells, spherical, conical, spiral. The enemy's fire is chiefly concentrated upon the position of the Second Corps. From the Cemetery to Round Top, with over a hundred guns, and to all parts of the enemy's

line, our batteries reply, of twenty and ten-pound Parrotts, ten-pound rifled ordnance, and twelve-pound Napoleons, using projectiles as various in shape and name as those of the enemy. Captain Hazard, commanding the Artillery Brigade of the Second Corps, was vigilant among the batteries of his command, and they were all doing well. All was going on satisfactorily. We had nothing to do, therefore, but to be observers of the grand spectacle of battle. Captain Wessels, Judge Advocate of the Division, now joined us, and we sat down just behind the crest, close to the left of Cushing's battery, to bide our time, to see, to be ready to act when the time should come, which might be at any moment. Who can describe such a conflict as is raging around us? To say that it was like a summer storm, with the crash of thunder, the glare of lightning, the shrieking of the wind, and the clatter of hailstones, would be weak. The thunder and lightning of these two hundred and fifty guns, and their shells, when smoke darkens the sky, are incessant, all-pervading, in the air above our heads, on the ground at our feet, remote, near, deafening, ear-piercing, astounding; and these hailstones are massy iron, charged with exploding fire. And there is little of human interest in a storm; it is an absorbing element of this. You may see flame and smoke, and hurrying men, and human passion, at a great conflagration; but they are all earthly, and nothing more. Those guns are great infuriate demons, not of the earth, whose mouths blaze with snaky tongues of living fire, and whose murky breath, sulphur-laden, rolls around them and along the ground, the smoke of Hades. These grimy men, rushing, shouting, their souls in frenzy, plying the dusky globes and the igniting spark, are in their league, and but their willing ministers. We thought that at the second Bull Run, at the Antietam, and at Fredericksburg on the 11th of December, we had heard heavy cannonading; they were but holiday salutes compared with this. Besides the great ceaseless roar of the guns, which was but the background of the others, a millions various minor sounds engaged the ear. The projectiles shriek long and sharp. They hiss, they scream, they growl, they sputter—all sounds of life and rage; and each has its different

note, and all are discordant. Was ever such a chaos of sound before? We note the effect of the enemy's fire among the batteries and along the crest. We see the solid shot strike axle, or pole, or wheel, and the tough iron and heart of oak snap and fly like straws. The great oaks there by Woodruff's guns heave down their massy branches with a crash, as if the lightning had smote them. The shells swoop down among the battery horses, standing there apart; a half dozen horses start, they tremble, their legs stiffen, their vitals and blood smear the ground. And these shot and shells have no respect for men, either. We see the poor fellows hobbling back from the crest, or, unable to do so, pale and weak, lying on the ground, with the mangled stump of an arm or leg dripping their life-blood away, or with a cheek torn open or a shoulder smashed. And many, alas! hear not the roar as they stretch upon the ground with upturned faces and open eyes, though a shell should burst at their very ears. We saw them but a moment since, there among the flame, with brawny arms and muscles of iron, wielding the rammer and pushing home the cannon's plethoric load.

Strange freaks these round shot play! We saw a man coming up from the rear with his full knapsack on, and some canteens of water held by the straps in his hands. He was walking slowly, and with apparent unconcern, though the iron hailed around him. A shot struck the knapsack, and it and its contents flew thirty yards in every direction; the knapsack disappeared like an egg thrown spitefully against the rock. The soldier stopped, and turned about in puzzled surprise, put up one hand to his back to assure himself that the knapsack was not there, and then walked slowly on again unharmed, with not even his coat torn. Near us was a man crouching behind a small disintegrated stone, which was about the size of a common water-bucket. He was bent up, with his face to the ground, in the attitude of a pagan worshipper before his idol. It looked so absurd to see him thus, that I went and said to him: "Do not lie there like a toad—why not go to your regiment and be a man?" He turned up his face with a stupid, terrified look upon me, and then without a word turned his nose again to the

ground. An orderly that was with me at the time told me a few moments later, that a shot struck the stone, smashing it in a thousand fragments, but did not touch the man, though his head was no six inches from the stone. All the projectiles that came near us were not so harmless. Not ten yards away from us a shell burst among some small bushes, where sat three or four orderlies, holding horses. Two of the men and one horse were killed. Only a few yards off a shell exploded over an open limber box in Cushing's battery, and almost at the same instant another shell over a neighboring box. In both the boxes the ammunition blew up with an explosion that shook the ground, throwing fire and splinters and shells far into the air and all around, and destroying several men. We watched the shells bursting in the air, as they came hissing in all directions. Their flash was a bright gleam of lightning radiating from a point, giving place in a thousandth part of a second to a small, white, puffy cloud, like a fleece of the lightest, whitest wool. These clouds were very numerous. We could not often see the shell before it burst, but sometimes, as we faced towards the enemy, and looked above our heads, the approach would be heralded by a prolonged hiss, which always seemed to me to be a line of something tangible, terminating in a black globe, distinct to the eye, as the sound had been to the ear. The shell would seem to stop, and hang suspended in the air an instant, and then vanish in fire and smoke and noise. We saw the missiles tear and plow the ground. All in rear of the crest for a thousand yards, as well as among the batteries, was the field of their blind fury. Ambulances passing down the Taneytown road with wounded men were struck. The hospitals near this road were riddled. The house which was General Meade's headquarters was shot through several times, and a good many horses of officers and orderlies were lying dead around it. Riderless horses, galloping madly through the fields, were brought up, or down rather, by these invisible horse-tamers, and they would not run any more. Mules with ammunition, pigs wallowing about, cows in the pastures, whatever was animate or inanimate, in all this broad range, were no exception to their

blind havoc. The percussion shells would strike and thunder, and scatter the earth, and their whistling fragments, the Whitworth bolts, would pound and ricochet, and bowl far away sputtering, with the sound of a mass of hot iron plunged in water; and the great solid shot would smite the unresisting earth with a sounding "thud," as the strong boxer crashes his iron fist into the jaws of his unguarded adversary.

Such were some of the sights and sounds of this great iron battle of missiles. Our artillery men upon the crest budged not an inch, nor intermitted; but, though caisson and limber were smashed, and guns dismantled, and men and horses killed, there, amidst smoke and sweat, they gave back without grudge or loss of time in the sending, in kind whatever the enemy sent.

An hour has droned its flight since first the roar began. There is no sign of weariness or abatement on either side. So long it seemed, that the din and crashing around began to appear the normal condition of nature there, and fighting man's element. The general proposed to go among the men, and over to the front of the batteries; so at about two o'clock he and I started. We went along the lines of the infantry as they lay there flat upon the earth a little to the front of the batteries. They were suffering little, and were quiet and cool. How glad we were that the enemy were no better gunners, and that they cut the shell fuses too long. To the question asked the men: "What do you think of this?" the replied would be: "Oh, this is bully"; "We are getting to like it"; "Oh, we don't mind this." And so they lay under the heaviest cannonade that ever shook the continent, and among them a thousand times more jokes than heads were cracked. We went down in front of the line some two hundred yards, and as the smoke had a tendency to settle upon a higher plane than where we were, we could see near the ground distinctly all over the field, as well back to the crest where were our own guns, as to the opposite ridge where were those of the enemy. No infantry was in sight save the skirmishers, and they stood silent and motionless—a row of gray posts through the field on one side, confronted by another of blue.

Under the grateful shade of some elm trees, where we could see much of the field, we made seats of the ground and sat down. Here all the more repulsive features of the fight were unseen by reason of the smoke. Man had arranged the scenes, and for a time had taken part in the great drama; but at last, as the plot thickened, conscious of his littleness, and inadequacy to the mighty part, he had stepped aside and given place to more powerful actors. So it seemed; for we could see no men about the batteries. On either crest we could see the great flaky streams of fire, and they seemed numberless, of the opposing guns, and their white banks of swift convolving smoke; but the sound of the discharges was drowned in the universal ocean of sound. Over all the valley, the smoke, a sulphur arch, stretched its lurid space; and through it always, shrieking on their unseen courses, thickly flew a myriad of iron deaths. With our grim horizon on all sides round, toothed thick with battery flame, under that dissonant canopy of warring shells, we sat, and saw, and heard in silence. What other expression had we that was not mean, for such an awful universe of battle?

A shell struck our breastwork of rails up in sight of us, and a moment afterwards we saw the men bearing some of their wounded companions away from the same spot; and directly two men from there came down toward where we were, and sought to get shelter in an excavation near by, where many dead horses, killed in yesterday's fight, had been thrown. General Gibbon said to these men, more in a tone of kindly expostulation than of command: "My men, do not leave your ranks to try to get shelter here. All these matters are in the hands of God, and nothing that you can do will make you safer in one place than another." The men went quietly back to the line at once. The general then said to me: "I am not a member of any church, but I have always had a strong religious feeling; and so, in all these battles, I have always believed that I was in the hands of God, and that I should be unharmed or not, according to His will. For this reason, I think it is, I am always ready to go where duty calls, no matter how great the danger."

Half past two o'clock, an hour and a half since the com-

mencement, and still the cannonade did not in the least abate; but soon thereafter some signs of weariness and a little slacking of fire began to be apparent upon both sides. First we saw Brown's battery retire from the line, too feeble for further battle. Its position was a little to the front of the line. Its commander was wounded, and many of its men were so, or worse; some of its guns had been disabled, many of its horses killed; its ammunition was nearly expended. Other batteries in similar case had been withdrawn before, to be replaced by fresh ones, and some were withdrawn afterwards. Soon after the battery named had gone, the general started to return, passing towards the left of the division, and crossing the ground where the guns had stood. The stricken horses were numerous, and the dead and wounded men lay about, and as we passed these latter, their low, piteous call for water would invariably come to us, if they had yet any voice left. I found canteens of water near—no difficult matter where a battle has been—and held them to livid lips; and even in the faintness of death the eagerness to drink told of the terrible torture of thirst. But we must pass on. Our infantry was still unshaken, and in all the cannonade suffered very little. The batteries had been handled much more severely. I am unable to give any figures. A great number of horses have been killed—in some batteries more than half of all. Guns had been dismounted, a great many caissons, limbers and carriages had been destroyed, and usually from ten to twenty-five men to each battery had been struck, at least along our part of the crest. Altogether the fire of the enemy had injured us much, both in the modes that I have stated, and also by exhausting our ammunition and fouling our guns, so as to render our batteries unfit for further immediate use. The scenes that met our eyes on all hands among the batteries were fearful. All things must end, and the great cannonade was no exception to the general law of earth. In the number of guns active at one time, and in the duration and rapidity of their fire, this artillery engagement up to this time must stand alone and preeminent in this war. It has not been often, or many times, surpassed in the battles of the world. Two hundred and fifty

guns, at least, rapidly fired for two mortal hours! Cipher out the number of tons of gunpowder and iron that made these two hours hideous.

Of the injury of our fire upon the enemy, except the facts that ours was the superior position, if not better served and constructed artillery, and that the enemy's artillery hereafter during the battle was almost silent, we knew little. Of course during the fight we often saw the enemy's caissons explode, and the trees, rent by our shot, crashing about his ears; but we can from them alone infer but little of general results. At three o'clock, almost precisely, the last shot hummed and bounded and fell, and the cannonade was over. The purpose of General Lee in all this fire of his guns—we know it now, we did not at the time so well—was to disable our artillery and break up our infantry upon the position of the Second Corps, so as to render them less an impediment to the sweep of his own brigades and divisions over our crest and through our lines. He probably supposed our infantry was massed behind the crest and the batteries; and hence his fire was so high and the fuses to his shells were cut so long, too long. The general failed in some of his plans in this behalf, as many generals have failed before, and will again. The artillery fight over, men began to breathe more freely, and to ask: "What next, I wonder?" The battery men were among their guns, some leaning to rest and wipe the sweat from their sooty faces; some were handling ammunition boxes and replenishing those that were empty. Some batteries from the artillery reserve were moving up to take the places of the disabled ones; the smoke was clearing from the crest There was a pause between acts, with the curtain down, soon to rise upon the great final act and catastrophe of Gettysburg. We had passed by the left of the Second Division coming from the front; when we crossed the crest, the enemy was not in sight, and all was still. We walked slowly along in rear of the troops, by the ridge, cut off now from a view of the enemy or his position, and were returning to the spot where we had left our horses. General Gibbon had just said that he inclined to the belief that the enemy was falling back, and that the cannonade was only

one of his noisy modes of covering the movement. I said that I thought that fifteen minutes would show that, by all his bowling, they did not mean retreat. We were near our horses when we noticed Brigadier-General Hunt, Chief of Artillery of the Army, near Woodruff's battery, swiftly moving about on horseback, and apparently in a rapid manner giving some orders about the guns. Thought we, what could this mean? In a moment afterwards we met Captain Wessels, and the orderlies who had our horses; they were on foot leading the horses. Captain Wessels was pale, and he said, excited: "General, they say the enemy's infantry is advancing." We sprang into our saddles; a score of bounds brought us upon the all-seeing crest. To say that none grew pale and held their breath at what we and they then saw, would not be true. Might not six thousand men be brave and without shade of fear, and yet, before a hostile eighteen thousand, armed, and not five minutes' march away, turn ashy white? None on that crest need now be told that *the enemy is advancing!* Every eye could see his legions, an overwhelming, resistless tide of an ocean of armed men, sweeping upon us! Regiment after regiment, and brigade after brigade, move from the woods and rapidly take their places in the lines forming the assault. Pickett's proud division, with some additional troops, holds their right; Pettigrew's (Heth's) their left. The first line, at short interval, is followed by a second, and that a third succeeds; and columns between support the lines. More than half a mile their front extends; more than a thousand yards the dull gray masses deploy, man touching man, rank pressing rank, and line supporting line. Their red flags wave; their horsemen gallop up and down; the arms of eighteen thousand men, barrel and bayonet, gleam in the sun—a sloping forest of flashing steel. Right on they move, as with one soul, in perfect order, without impediment of ditch or wall or stream, over ridge and slope, through orchard and meadow and cornfield, magnificent, grim, irresistible. All was orderly and still upon the crest; no noise and no confusion. The men had little need of commands; for the survivors of a dozen battles knew well enough what this array is front portended, and, already in their places, they would

be prepared to act when the right time should come. The click of the locks as each man raised the hammer to feel with his finger that the cap was on the nipple; the sharp jar as a musket touched a stone upon the wall when thrust, in aiming, over it; and the clinking of the iron axles, as the guns were rolled up by hand a little further to the front, were quite all the sounds that could be heard. Cap boxes were slid around to the front of the body; cartridge boxes opened; officers opened their pistol holsters. Such preparation, little more, was needed. The trefoil flags, colors of the brigade and divisions, moved to their places in the rear; but along the lines in front, the grand old ensign that first waved in battle at Saratoga, in 1777, and which these people coming would rob of half its stars, stood up, and the west wind kissed it as the sergeants sloped its lance towards the enemy. I believe that not one above whom it then waved but blessed his God that he was loyal to it, and whose heart did not swell with pride towards it, as the emblem of the Republic.

General Gibbon rode down the lines, cool and calm, and in an unimpassioned voice he said to the men: "Do not hurry, men, and fire too fast; let them come up close before you fire, and then aim low and steadily." The coolness of their general was reflected in the faces of his men. Five minutes had elapsed since first the enemy had emerged from the woods—no great space of time, surely, if measured by the usual standards by which men estimate duration—but it was long enough for us to note and weigh some of the elements of mighty moment that surrounded us; the disparity of numbers between the assailants and the assailed; that, few as were our numbers, we could not be supported or reinforced until support would not be needed, or would be too late; that upon the ability of the two trefoil divisions to hold the crest, and repel the assault, depended not only their own safety or destruction, but also the honor of the Army of the Potomac and defeat or victory at Gettysburg. Should these advancing men pierce our line, and become the entering wedge, driven home, that would sever our army asunder, what hope would there be afterwards, and where the blood-earned fruits of yesterday? It was long enough for the storm to drift

across more than half the space that had first separated it from us. None, or all, of these considerations either depressed or elevated us. They might have done the former, had we been timid; the latter, had we been confident and vain. But we were there waiting and ready to do our duty; that done, results could not dishonor us.

Our skirmishers open a spattering fire along the front, and, fighting, retire upon the main line—the first drops, the heralds of the storm, sounding upon our windows. Then the thunders of our guns, first Arnold's, then Cushing's and Woodruff's and the rest, shake and reverberate through the air, and their sounding shells smite the enemy. The general said I had better go and tell General Meade of this advance. To gallop to General Meade's headquarters, to learn there that he had changed them to another part of the field, to despatch to him by the Signal Corps, in General Gibbon's name, the message, "The enemy is advancing his infantry in force upon my front," and to be again upon the crest, were but the work of a minute. All our available guns are now active, and from the fire of shells as the range grows shorter and shorter, they change to shrapnel, and from shrapnel to canister; but in spite of shells and shrapnel and canister, without wavering or halt, the hardy lines of the enemy continue to move on. Their guns make no reply to ours, and no charging shout rings out today, as is their wont; but the courage of these silent men amid our shot seems not to need the stimulus of other noise. The enemy's right flank sweeps near Stannard's bushy crest, and his concealed Vermonters rake it with a well-delivered fire of musketry. The gray lines do not halt or reply, but withdrawing a little from that extreme they still move on. And so across all that broad, open ground they have come, nearer and nearer, nearly half the way, with our guns bellowing in their faces, until now a hundred yards, no more, divide our ready left from their advancing right. The eager men there are anxious to begin. Let them. First Harrow's breastworks flame, then Hall's, then Webb's. As if our bullets were the fire coals that touched off their muskets, the enemy in front halts and his countless level barrels blaze back upon

us. The Second Division is struggling in battle. The rattling storm soon spreads to the right, and the blue trefoils are vying with the white. All along each hostile front, a thousand yards, with narrowest space between, the volleys blaze and roll; as thick the sound as when a summer hailstorm pelts the city roofs; as thick the fire as when the incessant lightning fringes a summer cloud. When their infantry had opened fire our batteries soon became silent, and this without their fault, for they were foul by long previous use. They were the targets of the enemy's concentrated bullets, and some of them had expended all their canister; but they were not silent before Rhorty was killed, Woodruff had fallen mortally wounded, and Cushing, firing almost his last canister, had dropped dead among his guns, shot through the head by a bullet. The conflict is left to the infantry alone. Unable to find my general when I had returned to the crest after transmitting his message to General Meade, and while riding in the search, having witnessed the development of the fight from the first fire upon the left by the main lines, until all of the two divisions were furiously engaged, I gave up hunting as useless—I was convinced that General Gibbon could not be on the field; I left him mounted; I could easily have found him now had he so remained, but now, save myself, there was not a mounted officer near the engaged lines—and was riding towards the right of the Second Division, with purpose to stop there, as the most eligible position to watch the further progress of the battle, then to be ready to take part, according to my own notions, wherever and whenever occasion was presented. The conflict was tremendous, but I had seen no wavering in all our line. Wondering how long their ranks, deep though they were, could stand our sheltered volleys, I had come near my destination, when—great heaven! were my senses mad?—the larger portion of Webb's brigade—my God, it was true—there by the group of trees and the angles of the wall, was breaking from the cover of the works, and without order or reason, with no hand uplifted to check them, was falling back, a fear-stricken flock of confusion! The fate of Gettysburg hung upon a spider's single thread! A great, magnificent passion came on me at the

instant; not one that overpowers and confounds, but one that blanches the face and sublimes every sense and faculty. My sword that had always hung idle by my side, the sign of rank only, in every battle, I drew, bright and gleaming, the symbol of command. Was not that a fit occasion and those fugitives the men on whom to try the temper of the Solingen steel? All rules and proprieties were forgotten, all considerations of person and danger and safety despised; for, as I met the tide of those rabbits, the flags of the enemy began to thicken and flaunt along the wall they had just deserted, and one was already waving over the guns of the dead Cushing. I ordered those men to *"halt,"* and *"face about,"* and *"fire,"* and they heard my voice, and gathered my meaning, and obeyed my commands. On some unpatriotic backs, of those not quick of comprehension, the flat of my sabre fell, not lightly; and at its touch their love of country returned, and with a look at me as if I were the destroying angel as I might have become theirs, they again faced the enemy. General Webb soon came to my assistance. He was on foot, but he was active, and did all that one could do to repair the breach or to avert its calamity. The men that had fallen back, facing the enemy, soon regained confidence and became steady. This portion of the wall was lost to us, and the enemy have gained the cover of the reverse side, where he now stormed with fire. But Webb's men, with their bodies in part protected by the abruptness of the crest, now sent back in the enemy's face as fierce a storm. Some scores of the venturesome enemy that, in their first push at the wall, had dared to cross at the further angle, and those that had desecrated Cushing's guns, were promptly shot down, and speedy death met him who should raise his body to cross it again. At this point little could be seen of the enemy, by reason of his cover and the smoke, except the flash of his muskets and his waving flags. Those red flags were accumulating at the wall every moment, and they maddened us as the same color does the bull. Webb's men were falling fast, and he is among them to direct and encourage; but however well they may now do, with that walled enemy in front, with more than a dozen flags to Webb's three, it soon becomes apparent that

in not many minutes they will be overpowered, or that there will be none alive for the enemy to overpower. Webb has but three regiments, all small—the Sixty-ninth, Seventy-first and Seventy-second Pennsylvania—the One Hundred and Sixth Pennsylvania, except two companies, is not here today—and he must have speedy assistance, or this crest will be lost. Oh! where is Gibbon—where is Hancock—some general, anybody, with the power and the will to support this wasting, melting line? No general came, and no succor! I thought of Hayes upon the right; but from the smoke and roar along his front, it was evident he had enough upon his hands, if he stayed the inrolling tide of the enemy there. Doubleday upon the left was too far off, and too slow, and on another occasion I had begged him to send his idle regiments to support another line, battling with thrice its numbers, and this "Old Sumter Hero" had declined.

As a last resort I resolved to see if Hall and Harrow could not send some of their commands to reinforce Webb. I galloped to the left in the execution of my purpose, and as I attained the rear of Hall's line, from the nature of the ground there, and the position of the enemy, it was easy to discover the reason and the manner of this gathering of the enemy's flags in front of Webb. The enemy, emboldened by his success in gaining our line by the group of trees and the angle of the wall, was concentrating all his right against, and was further pressing, that point. There was the stress of his assault—there would he drive his fiery wedge to split our line. In front of Harrow's and Hall's brigades he had been able to advance no nearer than when he first halted to deliver fire; and these commands had not yielded an inch. To effect the concentration before Webb, the enemy would march the regiment on his extreme right of each of his line, by the left flank, to the rear of the troops, still halted and facing to the front, and so continuing to draw in his right. When they were all massed in the position desired, he would again face them to the front, and advance to the storming. This was the way he made the wall before Webb's line blaze with his battle flags, and such was the purpose then of his thick-crowding battalions. Not a moment must be lost. Colonel Hall I

found just in rear of his line, sword in hand, cool, vigilant, noting all that passed, and directing the battle of his brigade. The fire was constantly diminishing now in his front, in the manner, by the movement of the enemy, that I have mentioned, drifting to the right. "How is it going?" Colonel Hall asked me as I rope up. "Well, but Webb is hotly pressed, and must have support, or he will be overpowered. Can you assist him?" "Yes." "You cannot be too quick." "I will move my brigade at once." "Good." He gave the order, and in briefest time I saw five friendly colors hurrying to the aid of the imperilled three: and each color represented true, battle-tried men, that had not turned back from the enemy's fire that day nor yesterday, though their ranks were sadly thinned. To Webb's brigade, pressed back as it had been from the wall, the distance was not great from Hall's right. The regiments marched by the right flank. Colonel Hall superintended the movement in person. Colonel Devereaux coolly commanded the Nineteenth Massachusetts — his major, Rice, had already been wounded and carried off. Lieutenant-Colonel Macey, of the Twentieth Massachuetts, had just had his left hand shot off, and so Captain Abbott gallantly led over this fine regiment; the Forty-second New York followed their excellent colonel, Mallon. Lieutenant-Colonel Steele, Seventh Michigan, had just been killed, and this regiment, and the handful of the Fifty-ninth New York, followed their colors. The movement, as it did, attracting the enemy's fire, and executed in haste, as it must be, was difficult; but in reasonable time, and in order that is serviceable, if not regular, Hall's men are fighting gallantly side by side with Webb's, before the all-important point. I did not stop to see all this movement of Hall's, but from him I went further to the left, to the First Brigade. General Harrow I did not see, but his fighting men would answer my purpose as well. The Nineteenth Maine, the Fifteenth Massachusetts, the Eighty-second New York, and the shattered old thunderbolt, the First Minnesota—poor Farrell was dying then upon the ground where he had fallen—all men that I could find, I took over to the right at the *double quick*. As we were moving to, and near, the other

brigades of the division, from my position on horseback I could see that the enemy's right, under Hall's fire, was beginning to stagger and to break. The men saw, and as they swept to their places by the side of Hall's and opened fire, they roared, and this in a manner that said more plainly than words—for the deaf could have seen it in their faces, and the blind could have heard it in their voices—*the crest is safe!*

The whole division concentrated, and changes of position, and new phases, as well on our part as on that of the enemy, having, as indicated, occurred, for the purpose of showing the exact present posture of affairs some further description is necessary. Before the Second Division the enemy is massed, the main bulk of his force covered by the ground that slopes to his rear, with his front at the stone wall. Between his front and us extends the very apex of the crest. All there are left of the White Trefoil Division—yesterday morning there were three thousand eight hundred; this morning there were less than three thousand; at this moment there are somewhat over two thousand—twelve regiments in three brigades, are below, or behind the crest ,in such a position that by the exposure of the head and upper part of the body above the crest they can deliver their fire in the enemy's faces along the top of the wall. By reason of the disorganization incidental, in Webb's brigade, to his men having broken and fallen back, as mentioned, in the two other brigades to their rapid and difficult change of position under fire, and in all the division, in part, to severe and continuous battle, formation of companies and regiments in regular ranks is lost; but commands, companies, regiments, and brigades are blinded and intermixed—an irregular, extended mass—men enough, if in order, to form a line of four or five ranks along the whole front of the division. The twelve flags of the regiments wave defiantly at intervals along the front; at the stone wall, at unequal distances from ours of forty, fifty or sixty yards, stream nearly double this number of battle flags of the enemy. These changes accomplished on either side, and the concentration complete, although no cessation or abatement of the general din of conflict since the commencement had at any time been appreciable, now

it was as if a new battle, deadlier, stormier than before, had sprung from the body of the old; a young phœnix of combat, whose eyes stream lightning, shaking his arrowy wings over the yet glowing ashes of his progenitor. The jostling, swaying lines on either side boil, and roar, and dash their foamy spray, two hostile billows of a fiery ocean. Thick flashes stream from the wall; thick volleys answer from the crest. No threats or expostulation now; only example and encouragement. All depths of passion are stirred, and all combative fire, down to their deep foundations. Individuality is drowned in a sea of clamor; and timid men, breathing the breath of the multitude, are brave. The frequent dead and wounded lie where they stagger and fall; there is no humanity for them now, and none can be spared to care for them. The men do not cheer, or shout—they growl; and over that uneasy sea, heard with the roar of musketry, sweeps the muttered thunder of a storm of growls. Webb, Hall, Devereaux, Mallon, Abbott, among the men where all are heroes, are doing deeds of note. Now the loyal wave rolls up as if it would overleap its barrier, the crest; pistols flash with the muskets. My "Forward to the wall!" is answered by the rebel counter-command, "Steady, men," and the wave swings back. Again it surges, and again it sinks. These men of Pennsylvania, on the soil of their own homesteads, the first and only ones to flee the wall, must be the first to storm it. The color sergeant of the Seventy-second Pennsylvania, grasping the stump of the severed lance in both his hands, waved the flag above his head, and rushed toward the wall. "Will you see your color storm the wall alone?" One man only started to follow. Almost half way to the wall, down go color bearer and color to the ground—the gallant sergeant is dead. The line springs; the crest of the solid ground, with a great roar, heaves forward its maddened load—men, arms, smoke, fire, a fighting mass; it rolls to the wall; flash meets flash; the wall is crossed; a moment ensues of thrusts, yells, blows, shots, an undistinguished conflict, followed by a shout, universal, that makes the welkin ring again; and the last and bloodiest fight of the great battle of Gettysburg is ended and won.

Many things cannot be described by pen or pencil; such a fight is one. Some hints and incidents may be given, but a description or picture, never. From what is told the imagination may for itself construct the scene; otherwise he who never saw, can have no adequate idea of what such a battle is.

When the vortex of battle passion had subsided, hopes, fears, rage, joy, of which the maddest and the noisiest was the last, and we were calm enough to look about us, we saw that, as with us, the fight with the Third Division was ended; and that in that division was a repetition of the scenes immediately about us. In that moment the judgment almost refused to credit the senses. Are these abject wretches about us, whom our men are now disarming, and driving together in flocks, the jaunty men of Pickett's Division, whose steady lines and flashing arms, but a few moments since, were sweeping up the slope to destroy us? We know, but so sudden has been the transition we yet can scarce believe.

Just as the fight was over, and the first outburst of victory had a little subsided, when all in front of the crest was noise and confusion, prisoners being collected, small parties in pursuit of them far down into the field, flags waving, officers giving quick, sharp commands to their men, I stood apart for a few moments upon the crest, by that group of trees which ought to be historic forever, a spectator of the thrilling scenes around. Some few musket shots were still heard in the Third Division; and the enemy's guns, almost silent since the advance of his infantry, until the moment of his defeat, were dropping a few sullen shells among friend and foe upon the crest. Near me, saddest sight of the many of such a field, and not in keeping with all this noise, were mingled, alone, the thick dead of Maine, and Minnesota, and Michigan, and Massachusetts, and the Empire and Keystone States, who, not yet cold, with the blood still oozing from their death wounds, had given their lives to the country upon that stormy field. So mingled upon that crest let their honored graves be. Look, with me, about us. These dead have been avenged already. Where the long lines of the enemy's thousands so proudly advanced, see now how thick the silent men of gray are scattered. It is not an hour since those legions were

sweeping along so grandly—now sixteen hundred of their fiery mass are strewn among the trampled grass, dead as the clods they load; more than seven thousand, probably eight thousand, are wounded, some there with the dead in our hands, some fugitive far towards the woods, among them Generals Pettigrew, Garnett, Kemper and Armistead, the last three mortally, and the last one in our hands—"Tell General Hancock," he said to Lieutenant Mitchell, Hancock's aide-de-camp, to whom he handed his watch, "that I know I did my country a great wrong when I took up arms against her, for which I am sorry, but for which I cannot live to atone." Four thousand not wounded are prisoners of war; more in number of the captured than the captors. Our men are still "gathering them in." Some hold up their hands, or a handkerchief, in sign of submission; some have hugged the ground to escape our bullets, and so are taken; few made resistance after the first moment of our crossing the wall; some yield submissively with good grace, some with grim, dogged aspect, showing that, but for the other alternative, they would not submit to this. Colonels, and all less grades of officers, in the usual proportions, are among them, and all are being stripped of their arms. Such of them as escaped wounds and capture are fleeing, routed and panic-stricken, and disappearing in the woods. Small arms, more thousands than we can count, are in our hands, scattered over the field.

Such was really the closing scene of the grand drama of Gettysburg. After repeated assaults upon the right and the left, where, and in all of which, repulse had been his own success, this persistent and presuming enemy forms his chosen troops, the flower of his army, for a grand assault upon our center. The manner and the result of such assault have been told—a loss to the enemy of from twelve thousand to fourteen thousand, killed, wounded and prisoners, and of over thirty battle-flags. This was accomplished by not over six thousand men, with a loss on our part of not over two thousand five hundred killed and wounded.

Would to Heaven Generals Hancock and Gibbon could have stood there where I did, and have looked upon that field! It would have done two men, to whom the country owes much, good to have been with their men in that moment of victory, to have seen the results of those dispositions which they had made, and of that splendid fighting which men schooled by their discipline had executed. But they are both severely wounded, and have been carried from the field. One person did come that I was glad to see there; and he was no less than Major-General Meade, whom the Army of the Potomac was fortunate enough to have at that time to command it. See how a great general looked upon the field, and what he said and did, at the moment, and when he learned of his great victory.

General Meade rode up, accompanied alone by his son, who is his aide-de-camp—an escort, if select, not large for a commander of such an army. The principal horseman was no bedizened hero of some holiday review, but he was a plain man, dressed in a serviceable summer suit of dark blue cloth, without badge or ornament, save the shoulder straps of his grade, and a light, straight sword of a general, or general staff officer. He wore heavy high top boots and buff gauntlets, and his soft black felt hat was slouched down over his eyes. His face was very white, not pale, and the lines were marked and earnest, and full of care.

Then the work of the field went on. First the prisoners were collected and sent to the rear. Collected, the prisoners began their dreary march, a miserable, melancholy stream of dirty gray to pour over the crest to our rear. Many of their officers were well-dressed, fine, proud gentlemen, such men as it would be a pleasure to meet when the war is over. I had no desire to exult over them, and pity and sympathy were the general feelings of us all over the occasion. The cheering of our men, and the unceremonious handling of the captive flags, were probably not gratifying to the prisoners, but not intended for taunt or insult to the men; they could take no exception to such practices. When the prisoners were turned to the rear and were crossing the crest, Lieutenant-Colonel Morgan, General Hancock's chief of staff, was conducting a battery from the artillery reserve towards the Second Corps. As he saw the men in gray coming

over the hill, he said to the officer in command of the battery: "See up there. The enemy has carried the crest. See them come pouring over. The old Second Corps has gone, and you had better get your battery away from here as quickly as possible, or it will be captured." The officer was actually giving the order to his men to move back, when closer observation discovered that the graycoats that were coming had no arms, and then the truth flashed upon the minds of the observers. The same mistake was made by others.

In view of the results there that day—the successes of the arms of the country—would not the people of the whole country, standing then upon the crest with General Meade, have said with him, "Thank God?"

I have no knowledge, and little notion, of how long a time elapsed from the moment the fire of the infantry commenced until the enemy was entirely repulsed in this grand assault. I judge, from the amount of fighting, that probably the fight was of nearly an hour's duration, but I cannot tell, and I have seen none who knew. The time seemed but a very few minutes when the battle was over.

When the prisoners were cleared away, and order was again established upon the crest, where the conflict had impaired it, until between five and six o'clock, I remained upon the field directing troops to their positions, in conformity to the orders of General Meade. The enemy appeared no more in front of the Second Corps; but while I was engaged as I have mentioned, further to our left some considerable force of the enemy moved out and made a show of attack. Our artillery, now in good order again, in due time opened fire, and the shells scattered the *"Butternuts,"* as clubs do the gray snow-birds of winter, before they came within range of our infantry. This, save unimportant outpost firing, was the last of the battle.

Of the pursuit of the enemy, and the movements of the army subsequent to the battle, until the crossing of the Potomac by Lee, and the closing of the campaign, it is not my purpose to write. Suffice it, that on the night of the 3rd of July the enemy withdrew his left, Ewell's corps, from our front, and on the

morning of the 4th we again occupied the village of Gettysburg, and on that national day victory was proclaimed to the country; that floods of rain on that day prevented army movement of any considerable magnitude, the day being passed by our army in position upon the field, in burying our dead and some of those of the enemy, and in making the movements already indicated; that on the 5th the pursuit of the enemy was commenced, his dead were buried by us, and the corps of our army, upon various roads, moved from the battlefield.

With a statement of some of the results of the battle, as to losses and captures, and of what I saw in riding over the field when the army was gone, my account is done.

Our own losses in "killed, wounded and missing" I estimate at *twenty-three thousand*. Of the "missing" the larger proportion were prisoners lost on the 1st of July. Our loss in prisoners, not wounded, probably was *four thousand*. The losses were distributed among the different army corps about as follows: In the Second Corps, which sustained the heaviest loss of any corps, a little over *four thousand five hundred*, of whom the "missing" were a mere nominal number; in the First Corps, a little over *four thousand*, of whom a good many were "missing"; in the Third Corps, *four thousand*, of whom some were "missing"; in the Eleventh Corps, *four thousand*, of whom the most were "missing"; and the rest of the loss, to make the aggregate mentioned, were shared by the Fifth, Sixth and Twelfth Corps and the cavalry. Among these the "missing" were few, and the losses of the Sixth Corps and the cavalry were light. I do not think the official reports will show my estimate of our losses to be far from correct, for I have taken great pains to question staff officers upon the subject, and have learned approximate numbers from them. We lost no gun or flag, that I have heard of, in all the battle. Some small arms, I suppose, were lost on the 1st of July.

The enemy's loss in killed, wounded, and prisoners I estimate at *forty thousand*, and from the following data, and for the following reasons: So far as I can learn we took *ten thousand* prisoners, who were not wounded—many more than these were

captured, but several thousands of them were wounded. I have, so far as practicable, ascertained the number of dead the enemy left upon the field, approximately, by getting the reports of different burying parties. I think the dead upon the field were *five thousand;* almost all of whom, save those killed on the 1st of July, were buried by us, the enemy not having them in their possession. In looking at a great number of tables of killed and wounded in battles, I have found that the proportion of the killed to the wounded is as *one to five,* or more than five; rarely less than five. So with the killed at the number stated, *twenty-five thousand* would probably be wounded; hence the aggregate that I have mentioned. I think *fourteen thousand* of the enemy, wounded and unwounded, fell into our hands. Great numbers of his small arms, two or three big guns, and forty or more—was there ever such bannered harvest?—of his regimental battle-flags, were captured by us. Some day, possibly, we may learn the enemy's loss, but I doubt if he will ever tell truly how many flags he did not take home with him. I have great confidence, however, in my estimates, for they have been carefully made, and after much inquiry, and with no desire or motive to overestimate the enemy's loss.

The magnitude of the armies engaged, the number of the casualties, the object sought by the enemy, the result, will all contribute to give Gettysburg a place among the great historic battles of the world. That General Meade's concentration was rapid—over thirty miles a day were marched by several of the corps—that his position was skillfully selected, and his dispositions good, that he fought the battle hard and well, that his victory was brilliant and complete, I think all should admit. I cannot but regard it as highly fortunate to us, and commendable in General Meade, that the enemy was allowed the initiative, the offensive in the main battle; that it was much better to allow them, for his own destruction, to come up and smash his lines and columns upon the defensive solidity of our position, than it would have been to hunt him, for the same purpose, in the woods, or to unearth him from his rifle-pits. In this manner our losses were lighter and his heavier, than if the case had been

reversed. And whatever the books may say of troops fighting the better who make the attack, I am satisfied that in this war, Americans, the enemy as well as ourselves, are best on the defensive. The proposition is deducible from the battles of the war, I think, and my observation confirms it.

But men there are who think that nothing was gained or done well in this battle, because some other general did not have the command, or because any portion of the army of the enemy was permitted to escape capture or destruction. As if one army of a hundred thousand men could encounter another of the same number, of as good troops, and annihilate it! Military men do not claim or expect this; but the sensational paragraphers do; the doughty knights of purchasable newspaper quills; the formidable warriors from the brothels of politics; men of much warlike experience against—honesty and honor; of profound attainments in—ignorance; who have the maxims of Napoleon, whose spirit they as little understand as they do most things, to quote to prove all things; but who, unfortunately, have much influence in the country and with the government, and so over the army. It is very pleasant for these people, no doubt, at safe distances from guns, in the enjoyment of a lucrative office, or of a fraudulently obtained government contract, surrounded by the luxuries of their own firesides, where mud and flooding storms and utter weariness never penetrate, to discourse of battles, and how campaigns should be conducted; and armies of the enemy should be destroyed. But it should be enough, perhaps, to say that men here or elsewhere, who have knowledge enough of military affairs to entitle them to express an opinion on such matters, and accurate information enough to realize the nature and the means of this desired destruction of Lee's army, before it crossed the Potomac into Virginia, will be mostly likely to vindicate the Pennsylvania campaign of General Meade, and to see that he accomplished all that could have been reasonably expected of any general, of any army. Complaint has been, and is, made specifically against Meade, that he did not attack Lee near Williamsport, before he had time to withdraw across the river. These were the facts concerning the matter:

The 13th of July was the earliest day when such an attack, if practicable at all, could have been made. The time before this, since the battle, had been spent in moving the army from the vicinity of the field, finding something of the enemy, and concentrating before him. On that day the army was concentrated, and in order of battle, near the turnpike that leads from Sharpsburg to Hagarstown, Md., the right resting at or near the latter place, the left near Jones's Cross-roads, some six miles in the direction of Sharpsburg, and in the following order from left to right: the Twelfth Corps, the Second, the Fifth, the Sixth, the First, the Eleventh—the Third being in reserve behind the Second.

The mean distance to the Potomac was some six miles, and the enemy was between Meade and the river. The Potomac, swelled by the recent rain, was boiling and swift and deep. I have not the least doubt but that General Meade would have liked to drown them all, if he could, but they were unwilling to be drowned, and would fight first. To drive them into the river, then, they must first be routed. General Meade, I believe, favored an attack upon the enemy at this time, and he summoned his corps commanders to a council upon the subject. The first Corps was represented by Wadsworth; the Second by William Hays; the Third by French; the Fifth by Sykes; the Sixth by Sedgwick; the Eleventh by Howard; the Twelfth by Slocum; and the cavalry by Pleasonton. Of the eight generals, three, Wadsworth, Howard and Pleasonton, were in favor of immediate attack: and five, Hays, French, Sykes, Sedgwick, and Slocum, were not in favor of attack until better information was obtained of the position and situation of the enemy. Of the *pros*, Wadsworth only temporarily represented the First Corps, in the brief absence of Newton, who, had a battle occurred, would have commanded; Pleasonton, with his horses, would have been a spectator only; and Howard had lost so large a portion of the Eleventh Corps at Gettysburg, that he could scarcely have been relied upon to do effective work with his command. Such was the position of those who felt sanguinely inclined. Of the *cons*, were all of the fighting generals of the fighting corps save the

First. This, then, was the feeling of these generals: All who would have had no responsibility or part, in all probability, *hankered* for a fight; those who would have had both part and responsibility, did not. The attack was not made. At daylight on the morning of the 14th, strong reconnoissances from the Twelfth, Second and Fifth Corps were the means of discovering that between the enemy, except a thousand or fifteen hundred of his rear-guard, who fell into our hands, and the Army of the Potomac, rolled the rapid unbridged river. General Pettigrew was here killed. The enemy had constructed bridges, had crossing during all the preceding night, but so close were our cavalry and infantry upon him in the morning that the bridges were destroyed before his rear guard had all crossed.

Among the considerations influencing these generals against the propriety of attack at that time were probably the following: The army was wearied and worn down by four weeks of constant forced marching or battle, in the midst of heat, mud and drenching showers, burdened with arms, accoutrements, blankets, sixty to a hundred cartridges, and five to eight days' rations. What such weariness means, few save soldiers know. Since the battle the army had been constantly diminished by sickness or prostration, and by more straggling than I ever saw before. Poor fellows! they could not help it. The men were near the point where further efficient physical exertion was quite impossible. Even the sound of the skirmishing, which was almost constant, and the excitement of the impending battle, had no effect to arouse for an hour the exhibition of their wonted former vigor. The enemy's loss in battle, it is true, had been far heavier than ours, but his army was less weary than ours, for in a given time since the first of the campaign it had marched far less, and with lighter loads. They are accustomed to hunger and nakedness, customs to which our men do not take readily. And the enemy had straggled less, for the men were going away from battle, and towards home; and for them to straggle was to go into captivity, whose end they could not conjecture. The enemy were somewhere in position, in a ridgy, wooded country, abounding in strong, defensive positions, his main bodies concealed, protected

by riflepits and epaulements acting strictly on the defensive. His dispositions, his positions, even, with any considerable degree of accuracy, were unknown; nor could they be known, except by reconnoissances in such force, and carried to such extent, as would have constituted them attacks, liable to bring on at any moment a general engagement, and at places where we were least prepared, and least likely to be successful. To have had a battle there, then, General Meade would have had to attack a cunning enemy in the dark, where surprises, undiscovered rifle-pits and batteries, and unseen bodies of men, might have met his forces at every point. With his not greatly superior numbers, under such circumstances, had General Meade attacked, would he have been victorious? The vote of those generals at the council shows their opinion. My own is, that he would have been repulsed with heavy loss, with little damage to the enemy. Such a result might have satisfied the bloody politicians better than the end of the campaign as it was; but I think the country did not need that sacrifice of the Army of the Potomac at that time,—that enough odor of sacrifice came up to its nostrils from the First Fredericksburg field to stop their snuffing for some time. I felt the probability of defeat strongly at the time, when we all supposed a conflict would certainly ensue; for always before a battle, at least it so appears to me, some dim presentiment of results, some unaccountable foreshadowing, pervades the army,—I never knew the result to prove untrue,—which rests with the weight of conviction. Whether such shadows are cause, or consequence, I shall not pretend to determine; but when, as they often are, they are general, I think they should not be wholly disregarded by the commanders. I believe the Army of the Potomac is always willing, often eager, to fight the enemy, whenever, as it thinks, there is a fair chance for victory; that it always will fight, let come victory or defeat, whenever it is ordered so to do. Of course, the army, both officers and men, had very great disappointment and very great sorrow that they *escaped*,—so it was called,—across the river. The disappointment was genuine, at least to the extent that disappointment is like surprise; but the sorrow, to judge by looks, tones and actions, rather than by words, was not of that

deep, sable character for which there is no balm. Would it be an imputation upon the courage or patriotism of this army if it was not rampant for fight at this paritcular time and under the existing circumstances? Had the enemy stayed upon the left bank of the Potomac twelve hours longer there would have been a great battle there near Williamsport, on the 14th of July. After such digression, if such it is, I return to Gettysburg.

As good generalship is claimed for General Meade in this battle, so was the conduct of his subordinate commanders good. I know and have heard of no bad conduct or blundering on the part of any officer, unless the unauthorized movement of General Sickles, on the 2d of July, may be so characterized. The Eleventh Corps was outnumbered and outflanked on the first day, and when forced to fall back from their position, did not do it with the firmness and steadiness which might have been expected of veteran troops. With this exception, and some minor cases of very little consequence in the general result, our troops, whenever and wherever the enemy came, stood against them with storms of impassable fire. Such was the infantry, such the artillery. The cavalry did less, but it did all that was required.

The enemy, too, showed a determination and valor worthy of a better cause; their conduct in this battle even makes me proud of them as Americans. They would have been victorious over any but the best of soldiers. Lee and his generals presumed too much upon some past successes, and did not estimate how much they were due, on their part, to position, as at Fredericksburg, or on our part to bad generalship, as at the Second Bull Run and Chancellorsville.

The fight of the 1st of July we do not, of course, claim as a victory; but even that probably would have resulted differently had Reynolds not been struck. The success of the enemy in the battle ended with the 1st of July. They were joyous and jubilant,—so said our men in their hands, and the citizens of Gettysburg,—at their achievements on that day. Fredericksburg and Chancellorsville were remembered by them. They saw victory already won, or only to be snatched from the *"raw Pennsylvania Militia,"* as they thought they were when they saw them run; and already

the spires of Baltimore and the dome of the national capitol were forecast upon their glad vision, only two or three days' march away through the beautiful valleys of Pennsylvania and *"my"* Maryland. Was there ever anything so fine before! How pleasant it would be to enjoy the poultry and the fruit; the meats, the cakes, the beds, the clothing, the whiskey, without price, in this rich land of the Yankee! It would indeed! But on the 2d of July something of a change came over the spirit of their dreams. They were surprised at results, and talked less and thought more, as they prepared supper that night. After the fight of the 3d, they talked only of the means of their own safety from destruction. Pickett's splendid division had been almost annihilated, they said; and they talked not of how many were lost, but of who had escaped. They talked of those "Yanks" that had *clubs* on their flags and caps,—the trefoils of the Second Corps, that are like *clubs* in cards.

The battle of Gettysburg is distinguished in this war, not only as by far the greatest and severest conflict that has occurred, but for some other things that I may mention. The fight of the 2d of July, on the left, which was almost a separate and complete battle, is, so far as I know, alone in the following particulars: the numbers of men engaged at one time, and the enormous losses that occurred in killed and wounded, in the space of about two hours. If the truth could be obtained, it would probably show a much larger number of casualties in this, than my estimate in a former part of these sheets. Few battles of the war have had so many casualties altogether as those of the two hours on the 2d of July. The 3d of July is distinguished. Then occurred the "great cannonade,"—so we call it, and so it would be called in any war and in almost any battle. And besides this, the main operations that followed have few parallels in history, none in this war, of the magnitude and magnificence of the assault, single and simultaneous, the disparity of numbers engaged, and the brilliancy, completeness, and overwhelming character of the result in favor of the side numerically weakest. I think I have not, in giving the results of this encounter, over-estimated the number or the losses of the enemy. We learned on all hands, by prisoners, and

by their newspapers, that over two divisions moved up to the assault,—Pickett's and Pettigrew's,—that this was the first engagement of Pickett's in the battle, and the first of Pettigrew's save a light participation on the 1st of July. Their divisions usually number nine or ten thousand, or did at that time, as we understood. Then I have seen something of troops, and think I can estimate the number somewhat. The number of the enemy killed here I have estimated in this way: The second and third divisions of the Second Corps buried the enemy's dead in their own front, and where they fought upon their own grounds. By count they buried over *one thousand eight hundred*. I think no more than about *two hundred* of these were killed on the 2nd of July in front of the Second Division, and the rest must have fallen upon the 3d. My estimates that depend upon this contingency may be erroneous, but to no great extent. The rest of the particulars of this assault, our own losses and our captures, I know are approximately accurate. Yet the whole sounds like romance, a grand stage-piece of blood.

Of all the Corps d'Armee, for hard fighting, severe losses, and briliant results, the palm should be, as by the army it is, awarded to the *"Old Second."* It did more fighting than any other corps, inflicted severer losses upon the enemy, in killed and wounded, and sustained a heavier like loss; and captured more flags than all the rest of the army, and almost as many prisoners as the rest of the army. The loss of the Second Corps in killed and wounded in this battle—there is no other test of hard fighting—was almost as great as that of all General Grant's forces, in the battles that preceded, and, in the siege of Vicksburg. Three-eights of the whole corps were killed and wounded. Why does the Western Army suppose that the Army of the Potomac does not fight? Was ever a more absurd supposition? The Army of the Potomac is grand! Give it good leadership—let it alone—and it will not fail to accomplish all that reasonable men desire.

Of Gibbon's white trefoil division, if I am not cautious, I shall speak too enthusiastically. This division has been accustomed to distinguished leadership. Sumner, Sedgwick, and Howard, have honored, and been honored by, its command. It

was repulsed under Sedgwick at Antietam, and under Howard at Fredericksburg; it was victorious under Gibbon at the Second Fredericksburg, and at Gettysburg. At Gettysburg its loss in killed and wounded was over *one thousand seven hundred*, near one-half of all engaged; it captured *seventeen* battle-flags and *two thousand three hundred prisoners*. Its bullets hailed on Pickett's Division and killed or mortally wounded four of their generals,—*Barksdale* on the 2d of July, with the three on the 3d, *Armistead, Garnett,* and *Kemper*. In losses, in killed and wounded, and in capture from the enemy of prisoners and flags, it stands pre-eminent among all the divisions at Gettysburg.

Under such generals as Hancock and Gibbon brilliant results may be expected. Will the country remember them? Attempts have been made to give the credit of *saving the day* at Gettysburg to this and that officer who participated in the battle, and even the President is believed to have been deceived by unfounded claims. But in the light of this truthful narrative can either the President or the country be insensible of the transcendent merit of General Meade and his brave subordinates?

About six o'clock on the afternoon of the 3d of July, my duties done upon the field, I quitted it to go to the general. My brave horse *Dick*—poor creature! his good conduct in the battle that afternoon had been complimented by a brigadier,—was a sight to see. He was literally covered with blood. Struck repeatedly, his right thigh had been ripped open in a ghastly manner by a piece of shell, and three bullets were lodged deep in his body; and from his wounds the blood oozed and ran down his sides and legs, and with the sweat formed a bloody foam. Dick's was no mean part in that battle. Good conduct in men under such circumstances as he was placed might result from a sense of duty; his was the result of his bravery. Most horses would have been unmanageable, with the flash and roar of arms about, and the shouting. Dick was utterly cool, and would have obeyed the rein had it been a straw. To Dick belongs the honor of first mounting that stormy crest before the enemy, not forty yards away, whose bullets smote him; and of being the only horse there during the heat of the battle. Even the enemy noticed Dick, and

one of their reports of the battle mentions the *"solitary horseman,"* who rallied our wavering line. He enabled me to do twelve times as much as I could have done on foot. It would not be dignified for an officer on foot to run; it is entirely so, mounted, to gallop. I do not approve of officers dismounting in battle, which is the time of all when they most need to be mounted, for thereby they have so much greater facilities for being everywhere present. Most officers, however, in close action, dismount. Dick deserves well of his country, and one day should have a horse monument. If there be, *"ut sapientibus placet,"* an equine elysium, I will send to Charon the brass coin, the fee for Dick's passage over, that on the other side of the Styx, in those shadowy clover fields, he may nibble the blossoms forever.

I had been struck upon the thigh by a bullet, which I think must have glanced, and partially spent its force, upon my saddle. It had pierced the thick cloth of my trousers and two thicknesses of underclothing, but had not broken the skin; leaving me with an enormous bruise, that for a time benumbed the entire leg. At the time of receiving it, I heard the thump, and noticed it and the hole in the cloth, into which I thrust my finger; and I experienced a feeling of relief, I am sure, when I found that my leg was not pierced. I think, when I dismounted from my horse after that fight, that I was no very comely specimen of humanity. Drenched with sweat, the white of battle, by the reaction, now turning to burning red, I felt like a boiled man; and had it not been for the exhilaration at results, I should have been miserable. This kept me up, however, and having found a man to transfer the saddle from poor Dick, who was now disposed to lie down by loss of blood and exhaustion, to another horse, I hobbled on among the hospitals in search of General Gibbon.

Oh, sorrowful was the sight to see so many wounded! The whole neighborhood in rear of the field became one vast hospital, of miles in extent. Some could walk to the hospitals; such as could not were taken upon stretchers, from the places where they fell, to selected point, and thence the ambulances bore them, a miserable load, to their destination. Many were brought to the buildings along the Taneytown road, and, too badly wounded to

be carried further, died, and were buried there; Union and rebel soldiers together. At every house and barn and shed the wounded were; by many a cooling brook, on many a shady slopes or grassy glade, the red flags beckoned them to their tented asylums; and there they gathered in numbers, a great army; a mutilated, bruised mass of humanity. Men with gray hair and furrowed cheeks, and soft-lipped, beardless boys, were there; for these bullets have made no distinction between age and youth. Every conceivable wound that iron and lead can make, blunt or sharp, bullet, ball and shell, piercing, bruising, tearing, was there; sometimes so light that a bandage and cold water would restore the soldier to the ranks again; sometimes so severe that the poor victim in his hopeless pain, remediless save by the only panacea for all mortal sufferings, invoked that. The men are generally cheerful, and even those with frightful wounds often are talking with animated faces of nothing but the battle and the victory; but some are downcast, their faces distorted with pain. Some have undergone the surgeon's work; some, like men at a ticket office, awaiting patiently their turn, to have an arm or a leg cut off. Some walk about with an arm in a sling; some sit idly upon the ground; some at full length lie upon a little straw, or a blanket, with their brawny, now blood-stained, limbs bare, and you may see where the minie bullet has struck, or the shell has torn. From a small round hole upon many a manly breast the red blood trickles; but the pallid cheek, the hard-drawn breath and dim-closed eyes, tell how near the source of life it has gone. The surgeons with coats off and sleeves rolled up, and the hospital attendants with green bands upon their caps, are about their work; and their faces and clothes are spotted with blood; and though they look weary and tired, their work goes systematically and steadily on. How much and how long they have worked, the pile of legs, arms, feet, hands, fingers, about partially tell. Such sounds are heard, sometimes—you would not have heard them upon the field—as convince that bodies, bones, sinews, and muscles are not made of insensible stone. Near by appears a row of small fresh mounds placed side by side. They were not there day before yesterday; they will become more numerous every day.

Such things I saw as I rode along. At last I found the generals. General Gibbon was sitting in a chair that had been *borrowed* somewhere, with his wounded shoulder bare, and an attendant was bathing it with cold water. General Hancock was near by in an ambulance. They were at the tents of the Second Corps hospitals, which were on Rock Run. As I approached General Gibbon, when he saw me he began to "hurrah," and wave his right hand; he had heard the result. I said: "O General! long and *well* may you wave"; and he shook me warmly by the hand. General Gibbon was struck by a bullet in the left shoulder, which had passed from the front, through the flesh, and out behind, fracturing the shoulder blade, and inflicting a severe but not dangerous wound. He thinks he was the mark of a sharp-shooter of the enemy, hid in the bushes near where he and I had sat so long during the cannonade; and he was wounded and taken off the field before the fire of the main lines in infantry had commenced; he being at the time he was hit, near the left of his division. General Hancock was struck a little later, near the same part of the field, by a bullet piercing and almost going through his thigh, without touching the bone, however. His wound was severe, also. He was carried back out of range, but before he would be carried off the field he lay upon the ground in sight of the crest, where he could see something of the fight, until he knew what would be the result. And there, at General Gibbon's request, I had to tell him and a large voluntary crowd of the wounded who pressed around, not for the wounds they showed, not rebuked for closing up to the generals, the story of the fight. I was nothing loath; and I must say, though I used sometimes before the war to make speeches, that I never had so enthusiastic an audience before. Cries of "good!" "glorious!" frequently interrupted me, and the storming of the wall was applauded by enthusiastic tears, and the waving of battered, bloody hands.

By the custom of the service, the general had the right to have me along with him, while away with his wound; but duty and inclination attracted me still to the field, and I obtained the general's consent to stay. Accompanying General Gibbon to Westminster, the nearest point to which railroad trains then ran,

and seeing him transferred from an ambulance to the cars for Baltimore, on the 4th, the next day I returned to the field to his division, since his wounding in the command of General Harrow.

On the 6th of July, while my bullet bruise was yet too inflamed and sensitive for me to be good for much in the way of duty,—the division was then halted for the day some four miles from the field on the Baltimore turnpike,—I could not repress the desire or omit the opportunity to see again where the battle had been. With the right stirrup strap shortened in a manner to favor the bruised leg, I could ride my horse at a walk without serious discomfort. It seemed very strange upon approaching the horse-shoe crest again not to see it covered with the thousands of troops, and the horses and guns; but they were all gone,—the armies, to my seeming, had vanished,—and on that lovely summer morning the stillness and silence of death pervaded the localities where so recently the shouts and the cannon had thundered. The recent rains had washed out many an unsightly spot and smoothed many a harrowed trace of the conflict; but one still needed no guide save eyes to follow the track of that storm which the storms of heaven were powerless soon to entirely efface. The spade and shovel, so far as a little earth for the human bodies would render their task done, had completed their work,—a great labor that,—but one still might see under some concealing bush or sheltering rock what once had been a man, and the thousands of stricken horses still lay scattered as they had died. The scattered small arms and accoutrements had been collected and carried away, almost all that were of any value: but great numbers of bent and splintered muskets, rent knapsacks and haversacks, bruised canteens, shreds of caps, coats, trousers of blue or gray cloth, worthless belts and cartridge boxes, torn blankets, ammunition boxes, broken wheels, smashed timbers, shattered gun carriages, parts of harness,—of all that men or horses wear or use in battle,—were scattered broadcast over miles of the field. From these one could tell where the fight had been hottest. The rifle-pits and epaulements, and the trampled grass, told where the lines had stood, and the batteries; the former being thicker where the enemy had been than those of our construction. No soldier was to be seen, but numbers of civilians and boys, and some girls, even, were curiously loitering about the field, and their faces showed, not sadness or horror, but only staring wonder or smirking curiosity. They looked for mementos of the battle to keep, they said, but their furtive attempts to conceal an uninjured musket or untorn blanket—they had been told that all property left here belonged to the government—showed that the love of gain was an ingredient, at least, of their motive for coming here. Of course there was not the slightest objection to their taking anything they could find now, but their manner of doing it was the objectionable thing. I could now understand why soldiers had been asked a dollar for a small strip of old linen to bind their own wounds and not be compelled to go off to the hospitals.

Never elsewhere upon any field have I seen such abundant evidences of a terrific fire of cannon and musketry as upon this. Along the enemy's position, where our shells and shot had struck during the cannonade of the third, the trees had cast their trunks and branches as if they had been icicles shaken by a blast; and graves of the enemy's making, and dead horses, and scattered accoutrements, showed that other things besides trees had been struck by our projectiles. I must say that, having seen the work of their guns upon the same occasion, I was gratified to see these things. Along the slope of Culp's Hill, in front of the position of the Twelfth, and the First Division of the First Corps, the trees were almost literally peeled, from the ground up some fifteen or twenty feet, so thick upon them were the scars the bullets had made. Upon a single tree, in several instances not over a foot and a half in diameter, I actually counted as many as two hundred and fifty bullet marks. The ground was covered by the little twigs that had been cut off by the hail-storm of lead. Such were the evidences of the storm under which Ewell's bold men assaulted our breastworks on the night of the 2d and the morning of the 3d of July. And those works looked formidable, zigzagging along those rocky crests, even now, when not a musket was behind them. What madness on the part of the enemy to

have attacked them! All along through those bullet-stormed woods were interspersed little patches of fresh earth raised a foot or so above the surrounding ground. Some were very near in front of the works, and near by upon a tree, whose bark had been smoothed by an axe, written in red chalk, would be the words, not in fine hand-writing: "75 *Rebils berid hear*"; "[illegible]54 *Rebs there*," and so on. Such was the burial, and such the epitaph, of many of those famous men, once led by the mighty Stonewall Jackson. Oh, this damned rebellion will make brutes of us all, if it is not soon quelled! Our own men were buried in graves, not trenches; and upon a piece of board, or stave of a barrel, or bit of cracker box, placed at the head, were neatly cut or pencilled the name and regiment of the one buried in each. This practice was general; but of course there must be some exceptions, for sometimes the cannon's load had not left enough of a man to recognize or name. The reasons here for the more careful interment of our own dead than such as was given to the dead of the enemy are obvious, and I think satisfactory: Our own dead were usually buried not long after they fell, and without any general order to that effect. It was a work that the men's hearts were in, as soon as the fight was over, and opportunity offered, to hunt out their dead companions, to make them a grave in some convenient spot, and decently composed, with their blankets wrapped about them, to cover them tenderly with earth, and mark their resting place. Such burials were not without as scalding tears as ever fell upon the face of coffined mortality. The dead of the enemy could not be buried until after the close of the whole battle. The army was about to move—some of it was already upon the march before such burial commenced. Tools, save those carried by the pioneers, were many miles away with the trains, and the burying parties were required to make all haste in their work in order to be ready to move with their regiments. To make long, shallow trenches; to collect the enemy's dead, often hundreds in a place, and to cover them hastily with a little earth, without name, number, or mark, save the shallow mound above them—their names, of course, they did not know—was the best that could be done. I should have been glad to

have seen more formal burial even of these men of the rebellion, both because hostilities should cease with death, and of the respect I have for them as my brave, though deluded, countrymen. I found fault with such burial at the time, though I knew that the best was done that could be under the circumstances; but it may perhaps soften somewhat the rising feelings upon this subject of any who may be disposed to share mine, that under similar circumstances, had the issue of the battle been reversed, our own dead would have had no burial at all at the hands of the enemy.

All was bustle and noise in the little town of Gettysburg as I entered it on my tour of the field. From the afternoon of the 1st to the morning of the 4th of July, the enemy was in possession. Very many of the inhabitants had, upon the first approach of the enemy, or upon the retirement of our troops, fled their homes, and the town, not to return until after the battle. Now the town was a hospital, where gray and blue mingled in about equal proportions. The public buildings, the court house, the churches, and many private dwellings, were full of wounded. There had been in some of the streets a good deal of fighting; and shells had riddled the houses from side to side. And the enemy had done his work of pillage there, too. In spite of the smooth-sounding general order of their commander, enjoining a sacred regard for private property,—the order was really good, and would sound marvelously well abroad, or in history,—all stores of drugs and medicine, of clothing, tinware, and all groceries, had been rifled and emptied, without pay or offer of recompense. But the people, the women and children that had fled, were returning, or had returned, to their homes,—such homes!—and amid the general havoc were restoring, as they could, order to the desecrated firesides. And the faces of them all plainly told that, with all they had lost, and bad as was the condition of all things they found, they were better pleased with such homes than with wandering houseless in the fields. All had treasures of incidents of the battle, and of the occupation of the enemy,—wonderful sights, escapes, witnessed encounters, wounds, the marvelous passage of shells and bullets,—which, upon the ask-

ing, or even without, they were willing to share with the stranger. I heard of no more than one or two cases of personal injury received by any of the inhabitants. One woman was said to have been killed while at her wash-tub, sometime during the battle: but probably by a stray bullet, coming a very long distance, from our own men. For the next hundred years Gettysburg will be rich in legends and traditions of the battle. I rode through the cemetery on "Cemetery Hill." How those quiet sleepers must have been astounded in their graves when the twenty-pound Parrott guns thundered over them, and the solitary shot crushed their grave-stones! The flowers, roses, and creeping vines, that pious hands had planted to bloom and shed their odors over the ashes of dear ones gone, were trampled upon the ground, and black with the cannon's soot. A dead horse lay by the marble shaft, and over it the marble finger pointed to the sky. The marble lamb that had slept its white sleep on the grave of a child now lies blackened upon a broken gun carriage. Such are the incongruities and jumblings of battle.

I looked away to *the group of trees*, and a strange fascination led me thither. How thick are the marks of battle as I approach,—the graves of the men of the Third Division of the Second Corps, the splintered oaks, the scattered horses; seventy-one dead horses were on a spot some fifty yards square, near the position of Woodruff's Battery, and where he fell.

I stood solitary upon the crest by "*the trees*," where less than three days ago I had stood before; but now how changed is all the eye beholds. Do these thick mounds cover the fiery hearts that in the battle rage swept the crest and stormed the wall? I read their names,—them, alas, I do not know,—but I see the regiments marked on their frail monuments,—"20th Mass. Vols," "69 P. V.," "1st Minn. Vols.," and the rest,—they are all represented, and, as they fought, commingle here. So I am not alone, —these, my brethren of the fight are with me. Sleep, noble brave! The foe shall not desecrate your sleep. Yonder thick trenches will hold them. As long as patriotism is a virtue, and treason a crime, your deeds have made this crest, your resting place, hallowed ground.

But I have seen and said enough of this battle. The unfortunate wounding of my general so early in the action of the 3d of July, leaving important duties, which in the unreasoning excitement of the moment I in part assumed, enable me to do for the successful issue something which under other circumstances would not have fallen to my rank or place. Deploring the occasion for taking away from the division in that moment of its need its soldierly, appropriate head, so cool, so clear, I am yet glad, as that was to be, that his example and his tuition have not been entirely in vain to me, and that my impulses then prompted me to do somewhat as he might have done had he been on the field. The encomiums of officers, so numerous, and some of so high rank, generously accorded me for my conduct upon that occasion,—I am not without vanity,—were gratifying. My position as a staff officer gave me an opportunity to see much—perhaps as much as any one person—of that conflict. My observations were not so particular as if I had been attached to a smaller command; not so general as may have been those of a staff officer of the general commanding the army, but of such as they were,—my heart was there and I could not do less than write about them, —in the intervals between marches, and during the subsequent repose of the army, at the close of the campaign, I have put somewhat upon these pages. I make no apology for the egotism, if such there is, of this account; it is not designed to be a history, but simply *my account* of the battle. It should not be assumed, if I have told of some occurrences, that there were not other important ones. I would not have it supposed that I have attempted to do full justice to the good conduct of the fallen, or the survivors, of the First and Twelfth Corps. Others must tell of them, I did not see their work.

A full account of *the battle as it was*, will never, can never, be made. Who could sketch the changes, the constant shifting of the bloody panorama! It is not possible. The official reports may give results, as to losses, with statements of attacks and repulses; they may also note the means by which results were obtained, which is a statement of the number and kind of the force employed; but the connection between means and results,

the mode, the battle proper, these reports touch lightly. Two prominent reasons at least exist which go far to account for the general inadequacy of these official reports, or to account for their giving no true idea of what they assume to describe: the literary infirmity of the reporters, and their not seeing themselves and their commands as others would have seen them. And factions, and parties, and politics, the curse of this Republic, are already putting in their unreasonable demands for the foremost honors of this field. "General Hooker won Gettysburg." How? Not with the army in person, or by infinitesimal influence—leaving it almost four days before the battle, when both armies were scattered, and fifty miles apart! Was ever claim so absurd? Hooker, and he alone, won the result at Chancellorsville. "General Howard won Gettysburg." "Sickles saved the day." Just Heaven, save the poor Army of the Potomac from its friends! It has more to dread, and less to hope, from them than from the red bannered hosts of the enemy. The States prefer each her claim for the sole brunt and winning of the fight. "Pennsylvania won it,"—"New York won it." Did not old Greece, or some tribe from the sources of the Nile, win it? For modern Greeks—from Cork—and African Hannibals were there. Those intermingled graves along the crest, bearing the names of every loyal State save one or two, should admonish these geese to cease their cackle. One of the armies of the country won the battle; and that army supposes that General Meade led it upon that occasion. If it be not one of the lessons that this war teaches, that we have a country, paramount, and supreme over faction and party and State, then was the blood of fifty thousand citizens shed on this field in vain. For the reasons mentioned, of this battle, greater than Waterloo, a history, just, comprehensive, complete, will never be written. By and by, out of the chaos of trash and falsehood that the newspapers hold, out of the disjointed mass of reports, out of the traditions and tales that come down from the field, some eye that never saw the battle will select, and some pen will write, what will be named *the history*. With that the world will be, and if we are alive we must be, content.

Already, as I rode down from the heights, Nature's mysterious loom was at work, joining and weaving on her ceaseless web the shells had broken there. Another spring shall green these trampled slopes, and flowers planted by unseen hands shall bloom upon these graves; another autumn, and the yellow harvest shall ripen there,—all not in less but higher perfection for this poured-out blood. In another decade of years, in another century, or age, we hope that the Union, by the same means, may repose in a securer peace, and bloom in a higher civilization. Then what matter it, if lame Tradition glean on this field and hand down her garbled sheaf—if deft Story with furtive fingers plait her ballad wreaths, deeds of her heroes here, —or if stately History fill, as she list, her arbitrary tablet, the sounding record of this fight,—Tradition, Story, History, all, will not efface the true, grand Epic of Gettysburg.

HASKELL.

THE MOROCCAN CAVALRY.

By First Lieutenant FRED J. HERMAN, Ninth Cavalry.*

Cavalry, as a separate and recognized corps, does not exist in the regular army of Morocco, although the proportion of mounted warriors in the military service of the sultan is perhaps greater than in any other army in the world.

The regular army of Morocco contains about 25,000 men of whom some 22,500 are infantry and the others field and foot artillery.

Added to this force, however, Morocco may at any time count upon some 100,000 very efficient militia—militia of greater efficiency than the regular army—most of whom are mounted and constitute the picturesque and irregular hordes of warriors who have from time to time rendered such good accounts of themselves.

But the warriors upon whom the sultan relies is the Muchhaznia, the *corps d'élite* of the armed forces of Morocco. This force, numbering some 17,500 mounted men, is composed of the four select Machhsen tribes, the Scherga, Scherarda, Udaja and Bukhari. These are unconditionally pledged to the military service of the government, and generally carry out their compact most faithfully. Those selected are the best warriors of their respective tribes and enjoy, with the other male members not selected, but subject to military service, the right to certain privileges, among them the enjoyment of the lands granted to their ancestors; they receive pay and are exempt from taxation. Many smaller privileges are also granted, as the privilege of falling out from the ranks of their troops when in the neighborhood of

* An extract from a translation of the military study "Morocco," in the "Militar Wochenblatt."

their homes, to greet friends and acquaintances and relatives, and to rejoin their troops at another point; also to participate in the military tournaments held in their respective villages.

By the aid of these Machhsen tribes, called collectively the Muchhaznia or "Gisch," the sultan upholds his power in the land, and with the aid of these feudal horsemen endeavors to subjugate other tribes who do not stand in the same relation to them. They are subordinate to the government and furnish armed men voluntarily and are simply military colonies whose members are available for life for military service, and who constitute the national police force of Morocco.

The chief of these collected tribes is commandant of the military colonists. The forces are organized or divided into tribal bodies called "Reha," consisting of 500 men, commanded by a "Kaid el Reha," under whom are five "Kaids el Mia," who command 100 men each, and are in turn supported by eight noncommissioned officers or overseers called Mekkaden. The pasha or governor of each tribe is appointed by the sultan.

As the population of these select tribes is too numerous to include all for military service only a portion thereof is required, and this portion is recruited in a hereditary manner, from the same families. The other tribesmen, thus free from duty, till the soil and constitute the reserve of their respective organizations. Only the Bukhari are all called to service.

The Bukhari are negroes, bought in the south by Sultan Mulei Ismail in the Seventeenth century, and settled in the vicinity of Mekness, and are not considered free. This does not prevent them, however, from promotion to positions of considerable honor. These number about 5,000 men.

These Machhsen tribesmen are considered as a special caste of the population, a caste having a part in the exercise of sovereignty. The name Machhsen refers particularly to the imperial government, although strictly construed it means the entire governing community of the empire, from the simple warrior to the sultan himself.

In addition to the above there are organized two corps of mounted men for special service in the immediate vicinity of the

sultan, of which the first, the Meschnari, numbers 500 men, taken from all the Machhsen tribes, is under the command of the Kaid el Meschnar—Meschnar refers to the palace—who has the honors and dignities of palace commandant. These serve principally as orderlies and messengers.

The other corps, that of the Mesakhrin, has a strength of about 3,000 men, similarly organized from selected members of the Machhsen tribes, forms a special imperial guard for the sultan, but must incidentally furnish men for like duties as is required of the Meschnari.

The Mesakhrin enjoy the distinction of being permitted to camp round about the imperial tent, upon the occasion of all marches. They are under the direct orders of the minister of war, to whom is detailed a special kaid from each tribe.

The men of this irregular cavalry wear the customary national dress. It consists of a long kaftan resembling a woman's dress of colored material, and reaching to the ankles, with wide sleeves, over which is drawn the shirt—the barachia—which, like the kaftan, is closed by numerous loops and corresponding knots, but discloses the kaftan, which is of green, moss green, red or blue color, according to the taste of the individual. Over the shirt is drawn the burnus with its cowl-like hanging. The fine quality of the cloths and the usual bright colors of the kaftan causes the clothing to appear rather picturesque and splendid.

The dagger (kumia) is carried on a plaited silken cord over one shoulder, and the saber (sif), often in silver-mounted scabbard like that of the dagger, is thrust through or wound about in voluminous sash, and so guarded from exterior influences, never hangs down, but is carried in a position of constant readiness.

The feet are thrust into leathern slippers, one of which is armed with a long, dagger-like spur. The headdress is the fez, the red pointed cchechia.

The horses, though small, are in general of good endurance. The saddle is large, red in color, with high pommel and cantle. The stirrups are of the long, slipper-like pattern, often of silver, or silver mounted. The bridles have the curb bits only, but these

are of a murderous character.

The Muchhaznia are also armed with rifle or musket, of many patterns and calibre, even to the muzzle loading variety. The imperial guard carries a Mauser carbine of uniform pattern and calibre and of German manufacture.

The uniforms of the imperial guard differ only from those of the Muchhaznia by the added richness of material, uniformity of colors and splendor of embroidery.

THE BRITISH VETERINARY SERVICE COMPARED WITH OUR OWN.

By COLEMAN NOCKOLDS, Veterinarian First Cavalry.

It was with extreme interest, from an army veterinarian's point of view, that I read the article by Captain W. D. Chitty, of the Fourth Cavalry, entitled "Historical Sketch of the Veterinary Service of the United States Army," in the July, 1909, number of the *Journal* of the U. S. Cavalry Association.

I must take exception to the sentence in which Captain Chitty remarks as follows: "It is only in recent years that the United States Army has been provided with efficient and effective veterinary service." At the same time it must be a matter of great satisfaction to the veterinarians in the service to know that their endeavors to do their duty are looked upon as efficient and effective. There is this to be said, under the circumstances and the great disadvantages of the position in which they are placed, it is extraordinary that they are able to give these impressions.

How much better and effectively they could perform the duties required of them if they were equipped and placed in the same position as their professional confreres in the foreign armies can only be shown by comparison.

Perhaps there are reasons for the fallacious position of the veterinarians who entered the army since 1901; surely not many. The captain mentions that in the examinations for entrance "there is no provision for general educational qualifications." This is to be regretted, and I am sure that the majority of veterinarians in the service today would have it otherwise.

Speaking from personal experience, the entrance examination to the veterinary school at which I matriculated is as severe, if not more so, as the examinations for entrance to any branch of the army. It requires the applicant to be possessed of an educational degree, the B. A. or its equal, from one of the recognized universities, or to pass the examination given by the college of perceptors. The subjects the applicant is examined in are, besides the ordinary English, including Euclid up to the fifth book, and algebra, to compound equations; also include a thorough knowledge of at least two of the following languages: Latin, French, German, Greek or Italian. Of these, one ancient and one modern language are compulsory. I mention this to prove that it is not the fault of the veterinarian that he had no chance to pass a fair general educational examination.

Having passed three years as a student at the Royal College, London, and was down on the army list all that time, at a period when the status of the British army veterinary surgeon was being changed to what it now is, and again visiting the Army Veterinary Schools at Aldershot and Army Veterinary Corps at various stations during 1906, at the request of the War Department, Washington, D. C., I can give some particulars of the analogy between the British veterinary service and our own.

Up to the year 1792 (the year the Royal College was opened) there were no veterinary surgeons in the British army, and the animals were attended to, when suffering from disease, by the regimental farriers; sometimes the surgeons were requisitioned to give assistance. Because of heavy losses among army horses early in the last century, veterinary surgeons were appointed to cavalry regiment, the Royal artillery and wagon train.

They entered the service with the rank of lieutenant.

Each regiment of cavalry had a veterinary surgeon, but there were but few in the Artillery Corps until the Crimean war, when the number was greatly increased. Veterinary surgeons were appointed, first and second class, the administrative officers being chosen by selection. This was much the same as our veterinary service now is, except that the pay and allowances of the first class veterinarians were those of a major, and second class, those of a captain.

In 1878 the regimental system (except in the guards) was abolished, and the Army Veterinary Department constituted. The Veterinary Department, from 1878 until a few years ago, consisted of 128 Veterinary Surgeons, ranking from Veterinary-Lieutenant to Veterinary-Colonel. At the present time the British Army Veterinary Corps is composed of a Director-General, Administrative Veterinary Officers and Executive Veterinary Officers. They are attached to various headquarters, regiments and posts.

RANKS.

(Extracts from pay warrant.) "319. The substantive rank of our Army Veterinary Service shall be as follows: Colonel, Lieutenant Colonel, Major, Captain, Lieutenant.

"320. The undermentioned officers shall rank as follows: As Major General, Director General, Army Veterinary Service.

"A Veterinary Officer is eligible for promotion to brevet rank, under usual conditions."

The rank is combatant, not non-combatant. The Geneva Convention does not recognize the Veterinarian as a non-combatant; neither is he protected by it. It would be rather awkward for the Veterinarian to be taken prisoner by the enemy in time of war and have to explain that he is a civilian, although in uniform.

Probably our Veterinarians would rather have rank of the non-combatant order, but would it not at times be rather at variance with international law?

Candidates for commissions in the British Army Veterinary Corps must make written application to the Secretary, War Office, London; a personal interview with the Director General is necessary and will be arranged by that officer. The minimum age is 21, and the maximum, 27. Candidates must be unmarried and will not be accepted unless in the opinion of the Army Council they are in all respects suitable to hold commission in the army. If approved he will be examined as to his physical fitness by a board of medical officers and if pronounced physically fit will then be eligible for examination. A candidate may be rejected if he shows any deficiency in his general education.

On appointment as Veterinary Officer he is required to undergo a special course of training at the Army Veterinary School at Aldershot. At the end of the course he is examined, and if the examination be satisfactory, and his general report good, he will be retained in the service and appointed a Veterinary officer on probation for a period of six months, at the expiration of which period, if his probationary service has been satisfactory, he shall, on the recommendation of the Director General, and with the approval of the Army Council, receive a commission as lieutenant, and the commission shall be antedated so as to include the period the lieutenant has passed on probation. If his probationary service has not been satisfactory, his services shall be dispensed with and he shall have no further claim on the service.

A lieutenant in the British Army Veterinary Corps is eligible for promotion to captain on completing five years' commissioned service upon passing the required examination. A captain, after ten years of service in that rank, to major. Majors are promoted by selection to the rank of lieutenant colonel, after fifteen years' service as majors, and have had at least three years in India. Colonels are chosen by selection from lieutenant colonels, who have had at least five years' service in that rank.

The office of director general is for a period of three years, and made by selection from the colonels. The officer appointed to this position ranks as major general during tenure of office.

The grades of the enlisted personnel of the Army Veterinary Department are as follows: Farrier quartermaster sergeant, farrier staff sergeant, farrier sergeant, sergeant, corporal, farrier corporal, shoeing smith, private.

Veterinary medicines, instruments and supplies are sent direct to the executive veterinary officers, through the administrative veterinary officers.

Veterinary officers have charge of remount depots, horse transports, and are the horse purchasing officers.

Non-commissioned officers of the Army Veterinary Corps are required to pass through the Army Veterinary School, either as farriers or horseshoers. No man is enlisted for the Army Veterinary Corps, or transferred to it, except he has served at least eight years in a mounted organization.

It is doubtful whether in our service the duties of the veterinarian are carried out in any two regiments or organizations alike. At regimental posts the chance to establish a routine system presents itself, and the immediate efficiency of the regiment as regards animals for duty can always be known. For about a year the commanding officer of the regiment to which I am attached has required the veterinary service to be executed upon the following lines: At a certain hour each day all the farriers report at a specified place with the animals to be prescribed for and examined (except those unable to walk the distance). Each farrier has a sick horse book, in which is entered each day, by name and number, the horses treated, their condition and the treatment prescribed. Each entry is checked daily by the attendant veterinarian. Horses are marked, hospital, quarters, garrison duty, or duty. Those animals suffering from complaints which require more than a few days for treatment are sent to the hospital, which is in charge of a veterinarian, and he renders a weekly report.

The veterinarian in charge of the hospital is allowed one non-commissioned officer, who is detailed for that special duty connected with the veterinary hospital, the detail being for a longer or shorter period as circumstances dictate, also one man as stable orderly, which is a monthly detail. Besides these two attendants, two farriers are required to attend a number of hours daily at the hospital to assist at operations and other duties, as mixing drugs and issuing medicines necessary for use in the troop lines. It is also required that the veterinarian inspect every troop and quartermaster animal at least once weekly.

Of course, this system is a vast improvement on the old method, when the veterinarian was required to attend stables, at stable call, when, more often than not, many cases had to be left to the farriers, because the veterinarian was unable to visit all troop lines during the time stables lasted.

Perhaps the greatest drawback to our veterinary system at present is the matter of inexperienced help that has to be used in a work where experience is so necessary. Even those men that attend the Riley school are unable to make use of experience

gained, as far as assisting at the veterinary work at a post goes, as necessarily they are so often promoted, which at once takes them away from the duty for which they were prepared at the service school; often they are specially adapted for this particular duty. Shoeing is perhaps the most important individual duty which the trooper is called upon to perform, yet there is no possibility for improvement in that line, as far as rank goes, while the man stays at it.

A system of promotion, regimental and squadron, would encourage men to take more interest in horseshoeing and farriering; a farrier sergeant and shoeing smith sergeant on the regimental non-commissioned staff, and the same class corporals on the squadron staffs would make valuable instructors to recently made farriers and shoeing smiths, also the proper men for details at veterinary hospitals, quarantine camps and to accompany small details of mounted detachments in the field, etc.

The position of army veterinarian is very unsatisfactory, so much so that at least two good men have resigned in recent years. A commission would regulate things more satisfactorily to all concerned than any other method, but there seems to be some serious objection to this, the reason for which is not very clear. If it is due to an ancient prejudice, carried down from the misty ages, why not drop it, the same as the old shoemaker was? If there are still in existence visible objections, there is always the process of elimination at hand. If the veterinarian is to remain a civilian, and there are reasons to give one the impression that some of them would prefer to do so, it seems only fair that some provision should be made, so that, after years of service and being closely associated with the same regiment and seeing everyone with whom he has become attached socially, promoted away from him, he would not always be last. For instance, there could be a set of quarters at each post at which a veterinarian is necessary set apart as the veterinarian's quarters, so that he, perhaps with his family, would not have to go to the bachelors' quarters, or be doubled up with another veterinarian with a family, to please a newly joined bachelor lieutenant, who prefers the quarters to the bachelor building. In the case of becoming injured or

sick in the line of duty, or dying and leaving a dependent family, it seems as if the veterinarian ought not to be the only man in the army not provided for, especially when one takes into consideration the often dangerous duties connected with his every day work.

The latter day veterinarian has nothing to complain of as far as individual sociability goes: it is as he makes it.

To quote from the article by Captain Chitty: "The present position of veterinarians, their low relative rank, poor pay, utter want of prospects, promotion, pension for long services, injuries or wounds, to which their professional duties render them so liable, is such as to deter respectable, efficient or talented professional men from entering, or, having entered, remaining in the service," is as true today as it was the day it was written.

Perhaps, to repeat what Prof. Schwarzkoph has remarked: "It was well known for a number of years that the majority of veterinarians in the service came either from the ranks of former farriers of the army, or were appointed from civil life, without any qualifications than they themselves professed to possess."

Today this is not the case, and I think I am justified in stating that men of the same caliber as those that have entered the service since 1901 would have been better off, especially from a financial standpoint, if they had gone into civil practice in preference to the army.

It is my opinion that some of those army veterinarians that send articles and communications concerning the service to little, almost local, magazines and reviews, would reach those in the service who have our interest most at heart, by writing once in a while to the CAVALRY JOURNAL.

HISTORY OF THE ARTICLES OF WAR.*

By Captain R. J. BURT, Ninth Infantry.

For the American, interest in this subject naturally centers in the rules and articles for the government of the armies of the United States. In seeking for the authority for the same, one naturally turns to our "Constitution of the United States" as the basis of our Federal Government, military as well as civil.

We find there that Congress is invested with certain powers, civil and military, among which is "To make Rules for the Government and Regulation of the land and naval Forces" and "To make all laws which shall be necessary and proper for carrying into Execution the foregoing Powers."

In accordance therewith Congress has enacted a statutory code, viz: "The Rules and Articles of War."

1789. On April 30th, 1789, the present United States Government began the exercise of its functions as marked out in the Constitution, but it was not until September of that year that Congress passed any legislation providing for the government of our armies. This it then did by simply recognizing what were called "The Articles of War," as they existed under the Articles of Confederation and making them apply to the standing army.

This army had its origin in the bands of patriots who, in 1774 and 1775, prepared, if necessity arose, to resist the usurpations of the Mother country. For their government the colonies naturally accepted for the time being, with some changes and omissions, the Rules and Articles of War in existence in the British Army, with which latter, numbers of colonists had served in the French and Indian Wars. Massachusetts was the

*Thesis prepared as a part of the course in Department of Law, Army Staff College, 1908-'9.

pioneer and her Provisional Congress adopted "The Massachusetts Articles of War" on April 5th, 1775, even before
1775. Revolutionary hostilities began. On June 30th of that year the Continental Congress likewise adopted Articles from the English and Massachusetts codes which served, with several additions, however, for the government of the Continental armies, and were statutorily recognized, as aforesaid, by Congress acting under the present Constitution.

From this point we look to England and the Continent for further steps in the pursuit of our history. The steps are easily traced in statutory form in Great Britain to the 17th century. From that time authentic records exist showing certain military articles and ordinances were issued, down to the twelfth century, and finally history teaches us that the Romans, and the Greeks before them, formulated certain laws, affecting the conduct of their soldiers, which in subject matter are closely allied to many of our present articles of war. That this is quite probable and natural is obvious since soldiers the world over, and as far as authentic history carries us, have been guilty of committing the same crimes and disorders, and, further, have been subject to much the same kinds of punishments. Among Roman sentences were dishonorable discharge, labor on fortifications, and police duty.

5th Century. In the 5th Century we find the written Salic code, which was, in character, civil as well as military.

9th Century. Successive Frankish Kings revised it up to the 9th Century.

In England there existed a record of an ordinance
1190. of Richard I (Coeur de Lion), of the year 1190, which he issued to his soldiers "about to proceed to Jerusalem." It is concerned with brawling and theft on shipboard.

The French contributed in 1378 their first "ordi-
1378. nance" of military law. Again in England appear the "Statutes, Ordinances and Customs" ordained by Rich-
1385. ard II, 1385, which may be properly called Articles of War. They consisted of 26 "Items," and, being the first of their kind, are given in brief as follows:

I. Commanding obedience to the King.
II. Against "touching the body" of the King.
III. Against pillaging the church, and crimes against women.
IV. Against leaving the banner of master or lord.
V. Against quitting assigned quarters.
VI. Commanding obedience to one's captain.
VII. Against robbery and pillage.
VIII. Against rioting.
IX. Against inciting an affray.
X. Against crying "Havok." (The signal for pillaging.)
XI. Against giving false alarm.
XII. As to ownership, or keeping, of prisoners, probably for ransom.
XIII. Against violent disputes over prisoners.
XIV. Against unauthorized expeditions.
XV. Against stampeding to witness, or learn of, any affray in the army.
XVI. One third of all pay, or gains, to go to the lord or master.
XVII. Against drawing away soldiers from their proper banner to join another.
XVIII. Commanding arms of St. George to be borne by all soldiers for their identification.
XIX. Commanding the proper guarding of one's prisoners and the reporting of the same to one's lord or master.
XX. Commanding to keep good watch and not to quit the same without permission.
XXI. Against giving safe conduct except by certain officials, and against violating a safe conduct on pain of being beheaded.
XXII. As to guarding of one's prisoners.

XXIII. Against retaining the "servant" of another.
XXIV. Against unauthorized foraging.
XXV. Against quartering oneself except by assignment of the herbergers.
XXVI. Commanding all names to be handed in for assignment of quarters.

Records exist of similar articles promulgated by Henry V, VII and VIII, 1413 to 1547.

1423-61. During the reign of Henry VI (1423-61) we find a forerunner of statutory military laws in an act of Parliament covering desertion and giving power to "justice of the peace to inquire and determine in the trial of the crime."—Tytler's Essay on Military Law.

1538. On the Continent in 1538 the Emperor, Charles V, issued a celebrated penal code, called, in brief, the "Carolina." It was the most important forerunner of existing military codes of continental Europe.

1590. 1621. In 1590 appeared the Articles of War of the Free Netherlands, and in 1621 those of Gustavus Adolphus, the latter consisting of 167 "Articles and Military Laws." It appears to have been the most elaborate of all codes up to that time. Traces of it are found in our Articles today. Witness an old translation of the 73d of the articles of Gustavus Adolphus, which is of interest as a probable antecedent of our forty-third:

"73. Whatsoever souldiers shall compell any Governour to give up any Strength shall lose their life for it: those, either Officers or Souldiers, that consent unto it, to be thus punished: the Officers to die all, and the souldiers every tenth man to be hanged; but herein their estate shall be considered, if they already have suffered famine and want of necessaries for their life, and bee withall out of hope to bee relieved, and are so pressed by the enemy, that of necessity they must within a short time give up the Peece, endangering their lives thereby without hope of reliefe: herein shall our Generall, with his Council of Warre, either cleer them, or condemne them according to their merit."

During the great political struggle between Parliament and Charles I in the 17th Century the government of the royal forces formed no small element of discord. Charles, on the
1625. return of troops from abroad in 1625, issued a "Commission" for their government. The country was at peace and the King's action so aroused Parliament as to call forth the "Petition of Rights" condemning the principles set forth in the commission. This latter delegated certain powers to the Lord Marshal and Sergeant-Major of the Army, with twenty-three other Civil and Military Persons, in substance as follows: 1st, to proceed, according to the Justice of Martial Law, against enlisted Soldiers and other dissolute persons joining themselves with them, and to punish them for robberies, felonies, mutinies, or other outrages or misdemeanors which, by Martial Law, ought to be punished by death; 2d, by summary course, as used in the Armies in time of War, to proceed to trial and condemnation of such offenders, and to put them to death according to the Law Martial for an example of terror to others, and to keep the rest in due awe and obedience; 3d, to erect the Gallows or Gibbets in such places as the Commissioners saw fit, and to execute the offenders in open view as a warning to others to demean themselves as good subjects ought to do.

This instrument assumed the authority to punish without legal trial in violation of the fundamental Laws of the Land.

1638. "The Commission of 1638 (issued on the occasion of Charles I raising an Army to quell Rebellion in the North of England) was directed to Lord Arundel (as General of the Army to be raised to resist Tumult, Seditions, or Conspiracies against the King or State), and gave him power to command and employ the Army for such Executions, Offenses, or Services as might be ordered under Royal Sign Manual." Two distinct purposes were, however, embraced in this Commission. The first was to execute against all Rebels "Martial Law," for the purpose of suppressing the Rebellion, "as to save whom you shall think good to be saved, and to slay, destroy, and put to execution of death such and so many as you shall think meet by your discretion to be put to death by any

manner of means, to the terror of all other offenders"; and the second was to govern the Army under what may be termed Military Law. Thus, "as well by yourself as by your deputies to hear all criminal causes growing and arising within the Army," and "to make and ordain Ordinances for the good government, rule and order of the Army," with the power of enforcing them by Capital Punishment. All these punishments were absolutely illegal.

In 1639 the already mentioned articles of Gustavus
1639. Adolphus were published in London, and in that same year the code of the Earl of Arundel was promulgated, which shows in many parts the marks of having been copied from that of the Swedish King. In this code of the Earl we have a good illustration of articles issued by a subordinate to the King, under the latter's official commission. Among the last to be thus issued were those of the Duke of Northumber-
1640. land, 1640, under King Charles during the "Great Civil
1644. War," and of the Earl of Essex, 1644, with the sanction of Parliament. Here appears for the first time the authority of that body affecting the Articles of War.

These last two mentioned codes are very similar and resemble also that of Gustavus Adolphus, which follows as a natural course of events since English troops had served under the Swedish General in Continental wars.

After the restoration, 1660, Parliament, though at
1660. first, at least, loyal to the King, was violently opposed to a standing army. Upon the conclusion of any war the troops were supposed to be disbanded. In ordinary times the defense of the nation rested upon certain fortresses constructed at the mouths of principal rivers and upon the militia. For the protection of the King the Yeomen of the Guard and Gentlemen-at-arms had been recognized since the time of Henry VII and VIII. Charles formed a small army of about nine thousand men and he was compelled to himself maintain it. In his articles of war for their government he assumed authority to extend punishments to the taking of life and limb, though this assumption of power was entirely illegal.

Lord Campbell, speaking of the period, said:

"The plan was formed of ruling by standing army. But, without a Parliament, how was this army to be kept in a proper state of discipline? In time of war, or during a rebellion, troops in the field were subject to martial law, and they might be punished by sentence of a court-martial for mutiny or desertion. But the country was now in a state of peace and profound tranquillity, and the common law, which alone prevailed, knew no distinction between civilian and soldier; so that if a life-guardsman deserted he could only be sued for breach of contract, and if he struck his officer he was only liable to an indictment on an action of battery."

Lord Albemarle's code of 1666 is of interest in that
1666. it provided for general, regimental, and detachment courts. The first was to be appointed by the commander-in-chief and composed of thirteen members. It had jurisdiction over offenses punishable with loss of life or limb. The second was for the trial of minor offenses. The detachment courts had the same powers as regimental courts and were appointed by governors of garrisons.

In 1688 Parliament grasped the affairs of state more
1688. firmly in its own hands than it had ever done before, and with the advent of William and Mary in that year proceeded to participate with vigor in the administration of the army.

In 1689 it became imperative that a code be adopted
1689. which would be effective in time of peace. The circumstances were these:

The Scottish regiment of Dunbarton, formerly commanded by the Duke of Monmouth, being ordered for embarkation to Holland, openly mutinied and declared their adherence to the abdicated Prince. The King communicated this event to Parliament, but, at the same time, marched three regiments of Dutch dragoons against the mutineers. These latter were soon subdued, but no way existed of punishing them except by trial for high treason. Parliament immediately grasped this occasion to assert itself and passed the first Mutiny Act, "for punishing Of-

ficers or Soldiers who shall Mutiny or Desert their Majestye's Service."

The following extract from the Act is interesting as showing Parliament's second great statutory wedge into affairs of the army; the first was one of the conditions upon which William III and Mary took the throne, "That the King could not maintain an army without the consent of Parliament":

"Whereas the raising or keeping a standing army within this kingdom in time of peace unless it be with consent of Parlyament is against Law. And whereas it is judged necessary by their Majestyes and this present Parlyament That dureing this time of Danger severall of the Forces which are now on foote should be continued and others raised for the Safety of the Kingdome for the common defense of the Protestant Religion and for the reduceing of Ireland * * *."

The articles, ten in number, did not take from the King his right to make articles for the army, or to authorize the death penalty for crimes committed abroad. That penalty could be inflicted at home only for the offenses designated. A further distinguishing feature was that the court-martial for the first time became the legal tribunal for the trial of military offenses within the realm in time of peace.

The Act was to be effective only from April 12th to November 10th, 1689. Soon after its expiration, however, it was re-enacted for one year and annually thereafter, with lapses of a few months from time to time, until 1879, when, with the Articles of War, it was consolidated by Parliamentary act.

1712. To return to 1712 and incidentally the Peace of Urecht; on the conclusion of that peace the prerogative power of the British Sovereign of governing his troops beyond the seas by Articles of War ceased. Parliament therefore gave the Crown statutory power during peace to make such articles and constitute courts-martial in those dominions.

1715. Then came the rebellion of 1715, which resulted, in one way, in causing statutory power to be conferred upon the Crown, to promulgate Articles of War at home.

1718. The two powers were consolidated in 1718. There had been no limitation to time of peace, of the articles enacted after 1712.

At about this same time the Mutiny Act, in some of its provisions, was extended in its action to dominions abroad.

The British army was then governed under various revised and amplified Mutiny Acts and Articles of War, jointly, up to the outbreak of the American Revolution, when the provisions of those codes were, with some exceptions, embodied in the Articles adopted for our Continental Armies.

1775. The forerunners of these were the Massachusetts Articles of 1775, already mentioned. This code contained fifty-three articles, of which fifty were, from their phraseology, taken from the British Articles of 1774. Many of them are verbatim copies, others only change the mention of "British forces" to "Massachusetts Army."

The following illustrate the important changes: By the 32d Massachusetts article a general court-martial was to consist of none "under the degree of a Field Officer" and the president swore the witnesses and court. He himself being sworn by the next ranking member. In the British army the court consisted of commissioned officers and the Judge Advocate General administered the oaths.

By the 50th "No Court-Martial shall order any offenders to be whipped or receive more than thirty-nine stripes for any one offense." There was no limit in the British articles.

This change is in line with the greatest difference between the two codes, viz., the amelioration of punishment in the American Articles. Only three of these permitted the death sentence, while that penalty could be exacted under seventeen of the British articles.

By the 51st article court-martial fines were collected by regiment and applied to benefit of the sick.

By the 53d. "All persons called to give evidence in any case before a Court-Martial, who shall refuse to give evidence, shall be punished for such refusal, at the discretion of such Court-Martial. The Oath to be administered in the form fol-

iowing, viz: You swear that the evidence you shall give in the case in hearing shall be the truth, the whole truth, and nothing but the truth, so help you God." Neither of the last two is embodied in any form in the British articles of 1774 or 1765 except in that witnesses "are to be examined upon oath."

The enactment of the Colonial Congress of June 30th, 1775, already mentioned, contains in its first articles the original requirement that the whole should be subscribed to by all officers and soldiers.

The fifty-three that follow are practically exact reproductions of the Massachusetts articles, the phraseology being changed to apply to the Continental Forces instead of the Massachusetts Army. It is evident that in addition, for the construction of this code, the British Articles of 1774 were referred to, since in two or three places the British ideas were more closely followed than in the Massachusetts Articles, courts-martial, for instance, being composed of commissioned officers instead of field officers, or those of higher grade.

Attendance at divine service was recommended instead of required and for the article fifty, prohibiting whipping, was substituted the following: "LI. That no person shall be sentenced by a court-martial to suffer death, except in the cases expressly mentioned in the foregoing articles, nor shall any punishment be inflicted at the discretion of a court-martial, other than degrading, cashiering, drumming out of the army, whipping not exceeding thirty-nine lashes, fine not exceeding two months' pay of the offender, imprisonment not exceeding one month."

The requirements that fines go to the benefit of the sick, and that witnesses refusing to testify be punished by the court were continued.

In addition to these fifty-four, fifteen more articles were added, all of which were taken from the British Articles of 1774.

By the 67th, the pardoning power in general court cases was given to the commander-in-chief, since there was at that time no executive head, and to regimental commanders in regimental court cases.

The death sentence still was restricted to three offenses

viz: Abandoning any post during an engagement, making known the watch-word, and leaving colors to plunder. This seems to reflect the violent feeling of the times against any evidences of an autocratic standing army springing up from the forces of the United Colonies. Whether or not the people as a whole believed that the Continental soldiers would not be guilty of many offenses, unmentioned, or lightly dealt with, cannot here be stated, but if so, their attitude changed.

On November 7th, 1775, the Continental Congress enacted sixteen additional Articles. By four of these, holding treacherous correspondence with the army, mutiny or sedition, desertion to the enemy, and misbehaving before the enemy or abandoning a post, were put under the death penalty. In three, officers were to be cashiered and drummed out of camp and enlisted men whipped, namely, for drunkenness on guard, sleeping on post, and leaving colors to plunder. This last had previously come under the death penalty.

Three others prescribed punishments for embezzlement, one for cowardice on the part of the officers, one for lying out of quarters on the part of officers as well as enlisted men, and three for irregularities regarding musters. The sixteenth article expressly made punishable, at the discretion of a regimental court-martial, a disobedience against a regimental order, and at the discretion of a general court-martial, disobedience of an order of the commander-in-chief or commanding officer of a detachment or post, if such general court-martial could be had.

It is apparent that this code was entirely inadequate to meet the situations arising in the Continental forces. Congress enacted, September 20th, 1776, quite a complete code. It was an extensive adaptation, word for word in great part, of the British code of 1774. It was divided into sections, covering, as the British articles, divine worship with the subscription to the rules and regulations added, mutiny, enlisting soldiers, musters, returns, desertion, quarrels and sending challenges, suttling, redress of wrongs and abuses toward citizens: crimes punishable by law, redressing wrongs of officers and enlisted men, stores, ammunition, etc., duties in quarters, garrison, or the field, ad-

ministration of justice, effects of the dead, artillery, militia, and miscellaneous articles relating to the foregoing. Sections on quartering and requisitioning of vehicles were omitted.

The code of the previous year was consulted, for some of its features were adopted, viz: That refusal to testify be punishable by the court; that where an officer be cashiered for cowardice or fraud the circumstances be published in neighboring papers and at his home; that the commander-in-chief have the pardoning power; that no person should be sentenced to suffer death except in the cases expressly mentioned in the articles, nor should more than one hundred lashes be inflicted on any offender, and that the fines collected be used in each regiment for the benefit of the sick.

Two ideas are introduced, new to Articles of War, but contained in the British Mutiny Act, viz: Trial for militiamen by militia officers only, and the preservation of a copy of every general court-martial proceeding and sentence in the office of the Secretary of War, from which the accused should have the right to demand a copy.

The following additional notes on this code may be of interest:

It contained no provision for convening a general court-martial, though the latter was required to consist of thirteen members. Among other things, it partook of the nature of a court of inquiry. No right to challenge was given. Plea of not guilty for standing mute was not recognized. There was no statute of limitations. No oaths were required from members of inferior courts, or witnesses appearing before them. There were one hundred and two articles; at the present day we have one hundred and twenty-eight.

The nearest article in point of phraseology to any existing today is the one providing that a soldier who enlists without a discharge from his previous organization be reputed a deserter. The article is carried verbatim with the omission of two words, "so offending," to our present fiftieth article. An officer giving protection against creditors to any man under the pretense of his being a soldier was to be cashiered. Soldiers received certain protection against creditors. Officers having brevets or commissions of a prior date to those of the regiment in which they served to take place in courts-martial and detachments, when composed of different corps, according to the ranks given them in their brevets, or dates of their former commissions; but in their regiments to take rank according to the commissions by which they were mustered in the corps.

Two articles dealt with the artillery, which seems to have been a special organization, making its personnel amenable to the Article of War. The number of distinct offenses involving the death penalty was one less than now. Persuading an officer or soldier to desert was not liable to that extreme punishment at any time.

The revised code was placed before Congress by John Adams. He was met with intense opposition and the act was passed with great difficulty. Congress evidently, without thoroughly considering, looked upon it with suspicion as an encroachment upon liberty.

During the next ten years these articles were not materially modified.

1777. In 1777, besides the commander-in-chief, "continental generals" commanding in either of the American states were given authority to appoint general courts-martial, and its accompanying pardoning.

1786. The important act of May 31st, 1786, revised section fourteen of the Articles, covering the administration of justice. Its enactment was mainly for the purpose of providing courts-martial for small detachments. The provisions of the previous code were modified by the following: General courts were thereafter to consist of from five to thirteen members and might be ordered "by the general or officer commanding the troops" in question; similarly the regimental courts were to consist of three members, and power to try capital cases was forbidden them; for the first time the judge-advocate was required to so far consider himself counsel for the prisoner as to object to any leading question to any of the witnesses, or any question to the prisoner, the answer to which might tend

to criminate himself; also that depositions of witnesses, not in the line or staff of the army, taken before justices of the peace, might be admitted as evidence.

This fourteenth section constituted the court of inquiry as we know it today. It had, however, existed in the British Army for many years previous.

Resolutions following these articles provided for the immediate reporting of deserters and requiring vigorous effort to be made for their recapture.

1791. At the adoption of the Constitution these, then, were the Articles of War in existence in the army of the Confederation. They were adopted by the Federal Congress September 29th, 1789, for the then existing army of the United States.

For seven years our military establishment labored under this code, which was necessarily unsuited to the new form of government. A few congressional enactments affecting it became absolutely necessary during the period. For example, the proceedings of courts-martial involving the loss of life, or the dismissal of an officer, were to be referred to the President instead of Congress, this by an act approved May 30th, 1796, which also contained the forerunner of the present 48th Article, namely, that a deserter should be liable to serve for and during such a period as should, with the time that he may have served previous to his desertion, amount to the full term of his enlistment.

This was entirely original. "It was neither borrowed nor adapted from a corresponding provision of the British Mutiny Act."—Davis. Strange to say, by the same act deserters could be tried and sentenced by a regimental or garrison court.

1806. On April 10th, 1806, the President approved the much needed revision of the Articles of War, which, with comparatively few modifications, stood for sixty-eight years. In this revision there was no division into sections, but the articles, one hundred and two in number, followed the sequence of the code of 1776 and its modifying articles. The wording, as a whole, was adapted to the changed conditions of

government. For example, where formerly court-martial proceedings had been forwarded to Congress, they were now sent to the "Department of War"; where the enlisting soldier took cath to obey the orders of the Continental Congress he now swore to obey those of the President of the United States. Some few former articles were combined and unnecessary words eliminated; as before, the forcing of a safeguard was the only crime to which the unqualified death penalty was attached.

Following the two codes by article we find the following important changes and new items:

Any commanding officer having reason to believe that a challenge has been given to arrest the officers implicated.

Any commanding officer failing to redress wrongs to citizens to be punished as a general court might direct instead of as if he himself had committed the disorders.

In the 33d Article appears "United States" in place of "United American States."

The 34th required the general commanding a State or Territory to take measures to redress wrongs of which officers complained.

For the first time mention is made of the Marine and Engineer Corps, officers of the former taking rank with the army and militia in combined forces. Those of the latter appearing in this paragraph, "The functions of the engineers being generally confined to the most elevated branch of military service, they are not to assume, nor are they subject to be ordered on, any duty beyond the line of their immediate profession, except by the special order of the President of the United States; but they are to receive every mark of respect to which their rank in the army may entitle them, etc." Further on they were placed in the special artillery article and mentioned as amenable to "these Rules and Articles."

The oath put to the judge-advocate was word for word as it is today.

Article seventy provided for the entering of the plea of "not guilty" when a prisoner stood mute to the pleading.

By seventy-one, challenges were permitted. Conduct unbe-

coming an officer and a gentleman was sufficient for his dismissal; no longer was it necessary that such conduct should be scandalous and infamous to warrant that sentence.

Fifty lashes instead of one hundred was the limit that might be given at the discretion of a court, and with this appeared "no officers, non-commissioned officer, soldier, or follower of the army, shall be tried a second time for the same offense."

Every officer authorized to order a general court-martial was now given the pardoning power, except in sentences of death or of cashiering an officer; "which, in the cases where he has authority (by Article 65) to carry them into execution, he might suspend until the pleasure of the President of the United States be known."

The 88th Article here contained the important statute of limitations, heretofore unmentioned in our Articles, though recognized in the British Mutiny Acts in the previous century.

By the one hundredth the President had the power to prescribe the uniform of the army.

Section two of the enactment prescribed that in time of war all persons not citizens of, or owing allegiance to the United States of America, who shall be found lurking as spies shall suffer death.

During the years up to the date of the next revision Congress passed various acts which affected the Articles of War, and, in greater part, were later embodied in them. These are in substance as follows:

1812. The prohibition of corporal punishment by stripes or lashes.

1830. No officer or soldier to be subject to the punishment of death in time of peace.

The appointment of the general court by the President when the department commander be the prosecutor or accuser.

1861. The oath of enlistment and re-enlistment to be administered by any commissioned officer of the army.

Court-martial proceedings before being forwarded for the President's action to be confirmed by the general commanding.

Any officer who, having tendered his resignation, may quit his post or proper duties, without leave, and with intent to remain permanently absent therefrom, prior to due notice of the acceptance of the same, to be deemed and punished as a deserter.

1862. During 1862 military legislation was necessarily continuous. Acts were passed covering the arrest and prompt trial of officers, and concerning the circumstances under which confinement in a penitentiary might be adjudged.

Article fifty-five was changed to make death the penalty for forcing a safeguard in foreign parts or in the United States during rebellion. The original article coming direct from the British codes made this a crime only if committed in foreign parts. As it stands at present, the provision would not apply in territory of the United States during time of invasion by foreign armies.

1863. During 1863 the following were conspicuous: Officers knowingly making unlawful enlistments of minors, insane persons, deserters and criminals to be court-martialed.

The punishment for certain crimes committed during war, rebellion, etc., to be not less than the punishment provided for the like offense by the laws of the State or Territory in which such offense may have been committed.

Certain offenders to be delivered up to civil magistrates as in our 59th Article. Certain crimes of fraud against the United States made punishable. A reiteration that courts-martial for the trial of militia shall be composed of militia officers only. That courts-martial shall have power to sentence officers who shall absent themselves from their commands without leave, to be reduced to the ranks to serve three years or during the war. Depositions limited to those of witnesses residing beyond the limits of the state in which courts be ordered to sit. Continuances to be granted as now in the 93d Article.

1866. In time of peace no officer to be dismissed except in pursuance of the sentence of a court-martial, or investigation thereof.

We now come to the most important revision of our ar-

ticles, that contained in the Revised Statutes. The latter were provided for by Act of Congress of June 27th, 1866, in which the President was authorized "to appoint three persons, learned in the law, as commissioners, to revise, simplify, arrange, and consolidate all statutes of the United States, general and permanent in their nature, which shall be in force at the time such commissioners may make the final report of their doings." And, further, "That, in performnig this duty, the commissioners shall bring together all statutes and parts of statutes which from similarity of subject ought to be brought together, omitting redundant or obsolete enactments, and making such alterations as may be necessary to reconcile the contradictions, supply the omissions, and amend the imperfections of the original text."

As a result of the labor of this commission we have the Revised Statutes covering all the laws of Congress to include December 1st, 1873. They were approved June 22d, 1874. Section 1342 contains the Articles of War.

Of the changes made, the most important appear in the embodiment of the acts of Congress affecting the army passed since 1806. In many places changes in phraseology have altered the meaning of original articles. In some respects the rearrangement, rather needlessly entered into, seems unfortunate. For instance, the old time-honored article two, now the fifty-second, earnestly recommending all officers and soldiers to attend divine service, having its origin in the uprising of the Christian faith, and originally promulgated by the world's greatest generals from the military era of Gustavus Adolphus on, should never have lost its prominence.

In passing we may well note what General Lieber has authoritatively stated: "The revision of 1874 was made, if I am correctly informed, by commissioners themselves not specially familiar with military law. Had it been possible at this time thoroughly to revise the Articles of War, a work might have been accomplished which the army had for a long time recognized as of great importance. The revision did indeed introduce new features, but they were principally such as upset

well-recognized principles, and placed obstacles in the way of the easy administration of justice."

As our code of today stands practically as that of 1874, it seems unnecessary to follow it further.

In conclusion, I would state that for ready reference a short history of our Articles of War may be found in Winthrop's Military Law.

NOTES ON CHINESE MILITARY ORGANIZATIONS.

By Captain JAMES H. REEVES, Fourteenth Cavalry.

These remarks are not intended to be a complete description of the Chinese Army, nor do I desire herein to express personal opinions relative to the same. It is desired only to give some idea of the scheme of organization, especially of the new army, how far that scheme has progressed and some of the principal stations occupied by the resultant army.

Before the Japan-Chinese War of 1894-95 the military forces of China consisted of the Manchu Bannermen and the Provincial troops.

Banner Organizations. The army specially pertaining to the Manchu dynasty was known as the Eight Banners, from the organization introduced by the early sovereigns of the reigning family. The Banners are distinguished by colors as: 1, Bordered Yellow; 2, Plain Yellow; 3, Plain White; 4, Bordered White; 5, Plain Red; 6, Bordered Red; 7, Plain Blue; 8, Bordered Blue.

These were divided into two classes, the first three being for some reason considered superior to the last five.

"The nationalities composing the Banner force are three in number, viz., Manchus, Mongols and Chinese, the latter being the descendants of those natives who joined the Manchu invaders during the period of conquest against the Ming dynasty in the early part of the Seventeenth century—the Manchus finally took Peking and seized the throne in 1644.

"As a complete division of each nationality exists under the color of each of the banners enumerated above, there are in fact 24 Banners (or eight Ch'i divided into three Ku-sai each)." The Manchus and Chinese under each Banner consist of five regiments of each nationality, while the Mongols have only two regiments.

Under one or the other of these banners all living Manchus and all descendants of the Mongolian and Chinese soldiery of the conquest are enrolled.

The main force of the Banners is "encamped" in Manchuria and in and around Peking, with offshoots in the various provincial garrisons. A certain number of the adult males of the force received special pay for being members of one or the other of the various military corps into which they have, from time to time, been organized, this in addition to their regular pittance as soldiers of the Banner. This pittance consisted of rations drawn from the tribute rice and amounted to some 2,000,000 piculs (125,000 tons) annually.

There are a general headquarters office of the Banners in Peking, to which one general from each of the Banners was appointed annually to do duty. Generally speaking, all positions and appointments in the Banners were open to all three nationalities alike. To this there was exception in the case of certain special appointments directly under the crown.

From this general Banner organization there were certain paid corps organized. The principal of these were:

1. The Guards' Division. This force was organized during the early wars of the Manchu sovereigns. Admission into this corps, which numbered some 3,000 to 4,000 strong, constituted the ambition of the great mass of the Bannermen in Peking.

2. The Vanguard Division. This, the leading division in the field, was composed entirely of Manchus or Mongols chosen from the entire Eight Banners at large.

3. The Artillery and Musketry Division.

4. The Light Division.

5. There were also certain special smaller organizations, such as The Guides, The Marksmen (for tiger hunting), The Imperial Hunting Department, etc.

6. The Peking Field Force. This force, comprising the elite of the Banner force of the capital, was organized in 1862, as a result of the disastrous campaign of 1860 against the British and French troops. It was organized with a view of provid-

ing a special defense force for the Central Government. It numbered 18,000 to 20,000 infantry, cavalry and artillery.

7. The Yuan Ming Yuan Division. This was the resident garrison at the Summer Palace. It was composed of men selected from all the Banners.

All the above mentioned forces or corps were considered as Peking Forces. There was also an elaborate organization for furnishing what was known as the garrisons outside of Peking.

1. There were the garrisons of the so-called Military Cordon, consisting of garrisons in twenty-five cities of Chihli Province surrounding Peking.

2. The Garrisons of the Imperial Tombs.

3. The Garrisons stationed in the Provinces and Dependencies, as follows: "In the original scheme the garrisons in the provinces made a total of half the garrison in the capital. Of the provincial garrisons about half were in a northern belt, designed partly as an outer defense to the capital, partly to look out on Mongolia; these are at the following places:

Shantung—Tsingchow and Tehchow.

Honan—Kaifeng.

Shansi—Kweihwa, Suiyuan, and Taiyuanfu.

Shensi—Sianfu.

Kansu—Ninghia, Liangchow and Chwangliang.

The garrisons designed primarily to hold down the conquered Chinese were stationed at the following places:

Szechwan—Chengtu.

Hupeh—Kingchow (guarding the outlet of the Yangtze Gorge).

Kiangsu—Nanking, with sub-garrison at Chinkiang.

Chekiang—Hanchow, with sub-garrison at Chapu (once its seaport, now silted up).

Fukien—Foochow.

Kwantung—Canton.

In six provinces there are no garrisons—five of them in the air, strategically, Kiangsi, Hunan, Kweichow, Yunnan and Kwangsi, and the sixth, Anhui, being until Kanghi's time administered as part of Kiangsu.

In each of the eleven provinces thus constituting the Marches of the Manchu Empire is stationed a Warden of the Marches, the Manchu Generalissimo or Field Marshal, commonly called Tartar General, ranking with but before the Viceroy or Civil Governor-General, not generally interfering with the civil government, but, though now innocuous, originally able to impose his will upon his civilian colleague.

Notwithstanding his high rank, he has now no more power or influence in the defense of the Empire than the Warden of the Cinque Ports has in that of England."

These organizations have all deteriorated and may be said to be practically non-existent, having absolutely no military value. The large part of the Bannermen are still pensioners on the bounty of the Throne and for that reason there is a semblance of keeping up the organizations of the Eight Banners, and many Lieutenant Generals are appointed as commanders for the same. For the same reason the Tartar Generalcies are still kept up, but except in one or two cases they have really no functions of importance as officers of the Government.

It is interesting to note that the edict finally abolishing the bow and arrow as the arms of the Banners was issued only on July 21, 1905.

Chinese Army. Besides the Manchu organization mentioned above there was what was known as the Chinese Army, usually called the Army of the Green Standard. This consisted of the Chinese provincial forces. These troops were divided into land and marine forces. The land forces had a total number of from 400,000 to 500,000. They have for a very long time been practically obsolete as field forces, their organization not really fitting them for such service. They discharged the duties of local constabulary and formed the resident garrisons in the various parts of the Empire.

These were superseded on all occasions when active service was required by special organizations of so-called "braves" or irregulars, enlisted and discharged according to circumstances. The organization of these irregular forces dates from the Taiping Rebellion (1850-64), when the regular organization was found

ineffective, and the great provincial rulers, Tseng Kwofan and Li Hungchang, found it necessary to raise these special forces.

These "braves" were organized into the so-called "camps," corresponding to battalions, and grouped into higher units as occasion demanded. These higher units were called districts, and there was no regular brigade or division formations.

For the Army of the Green Standard, there is in each province an officer or Commander-in-Chief, called Ti-tu. Under him there were territorial organizations of brigades and regiments and "camps."

The titleT'ung-ling was used for the commander of a military district, whatever his rank, which might be from that of Commander-in-Chief to that of Colonel.

Ying-kuan is the title of an officer commanding a sub-district, and ranks from Major to Second Captain.

The title Ying-tsun was used for officers in command of special bodies of troops, such as the "braves" when organized, or certain special Manchu contingents.

Wu-wei-chun. After the disasters of the Japanese War of 1894-95, a new army or force called the Wu-wei-chun was organized. It was independent of the provincial armies and was the first attempt at a national army for the defense of the Throne. This was not confined to the Banner organizations nor to the provinces, but was to be national. This force was divided into five divisions, each nominally 10,000 strong. The Generalissimo, or Commander-in-Chief, was Yung-lu (Jung-lu), a Grand Councillor, Viceroy of Chihli Province in 1898, and a name quite familiar in 1900 in connection with Boxerism.

The "Rear" or fifth division was composed of Mohammedans and were the principal troops attacking the legations in 1900.

The "Front" Division, under General Nieh, joined the Boxers at Tientsin in 1900. General Nieh was killed and after the capture of the native city, July 13th, the division was scattered and ceased to exist. Part of the Left Division also took part in the operations. The Center and Rear Divisions also took part in the attack on the legations. After the collapse of Boxerism these divisions were also scattered and ceased to exist, except a part of the Rear Division, which accompanied Tung Fusiang to his home in Kansu, and this was finally disbanded on his death a year or so ago.

The Right Division, originally commanded by Yuan Shihkai, was with him at Chi-nan-fu, the capital of Shantung Province, in 1900, and was instrumental in keeping that province quiet. He was Governor of the Province at that time.

In 1901, when Yuan was appointed Viceroy of Chihli Province, he brought his division to Peking. It formed the nucleus of the Lu-chun and is now merged in the 5th and 6th Divisions of that force.

The Left Division is therefore the only one remaining. It protected the Empress Dowager in her flight to Sian-fu, in Shensi Province, in 1900. When General Sung died in 1904 he was succeeded by General Mu Yukun, who was also Commander-in-Chief of Chihli Province.

Lu-chun. This brings us down to the time of the formation of the Lu-Chun, or generally called the new army. Probably the best name to give it is the National Army, for the object is to form a single army, gradually absorbing all the other forces. It is to be divided among all the Provinces, but directed and controlled by the War Board in Peking. This movement was commenced by H. E. Yuan Shihkai, Viceroy of Chihli, in 1904. Acting under the Imperial authority, from 1904 to 1906 he practically completed the organization of six divisions in Chihli Province. The movement had also begun in some of the other provinces, especially Hupeh and Kiang-su. About the end of 1906 the new War Board, or Lu-chun Pu, was organized and the command of four of the six divisions was transferred to this Board, leaving only two divisions under the control of the Viceroy of Chihli Province. This organization has been continued and spread until there are now more or less new troops in all the provinces.

Hsun-fang-tui. Since the formation of the Lu-chun the provincial troops have been reorganized and are now called Hsun-fang-tui, or, as we would properly call them, constabulary.

They are under the control of the provincial officials and are used for the enforcing of the civil laws of the country.

In addition to these, each town of any size has its own police, the duties of which are similar to that of police in other countries.

Surveillance Troops. There may also be mentioned a special force maintained on the Yangtze River and called the Surveillance Troops, or river police. This is a general police force that belongs to no province and is specially charged with the suppression of the salt smugglers.

Having briefly noted the different kinds of troops that China maintains, we will take up briefly the organization of each kind. As the Bannermen and the Army of the Green Standard have to all intents and purposes ceased to exist, it leaves for our consideration only the Wu-wei-chun, or so-called special defense army of the Throne, the Lu-chun or national army and the Hsun-fang-tui or constabulary.

Wu-wei-tso-chun (that is the Left Division of the Wu-wei-chun), better known to foreigners in recent years as the Army of General Ma Yukun, consists of twenty battalions of infantry, two battalions of artillery and two squadrons of cavalry. These are divided into five "lu" or districts, the first four containing each five battalions of infantry and the fifth containing two battalions of artillery and two squadrons. There is also the General's bodyguard, which consists of 100 mounted men. The districts are called right, left, center, front and rear.

Infantry Battalion. This consists of five companies (called shao), which are also named right, left, center, front and rear. Four of these companies have nine squads each, while the center one has only six squads; each squad has eleven men. This gives a total of 458 to a battalion; there are also 42 coolies to each battalion. Each battalion has a commanding officer and also a drill instructor who really commands the battalion on parade; each company has a captain and one subaltern; this gives a total of twelve officers to a battalion.

Cavalry Squadron. The cavalry is said to be divided into two parts, the regular and irregular. The regular receive ordinary pay and are given horses. The irregular are given additional pay, in all eight taels per month, and must furnish and feed their own horses. The keep of a horse costs from three to four taels per month, while the horse costs from forty to sixty taels. If the horse dies they are free to go; that is, return to their homes, or else wait in some nearby village till they have managed to get another horse, when they can return to work. The irregular part of this cavalry is said to be organized into five companies of 100 men each. The regular part is now, I believe, disbanded.

Artillery Battalion. Each battalion consists of about 250 men and twelve officers, with a number of coolies, horse attendants, etc., and about 250 horses. To the two battalions they claim to have 42 guns of various caliber and type.

There are thirteen field guns of 57 mm. caliber; eight quick firing 57 mm. caliber, and twenty-one mountain guns from 37 to 57 mm. caliber.

The strength of the force and stations are as follows:

Infantry—Fifteen battalions at T'ung-chow (15 miles east of Peking); two battalions at Ku-pei-kou (80 miles northeast of Peking); one battalion at Shih-hsia (60 miles north of Peking); one battalion at Mi-yun-hsien (45 miles northeast of Peking).

Artillery—Two battalions at T'ung-chow.

Cavalry—Five companies of irregular along the road from Peking to Ku-pei-kou.

General's bodyguard at T'ung-chow, the headquarters of the force.

Recapitulation:

Infantry	6,494	
Cavalry	500	
Artillery	500	
Bodyguard	100	7,594
To which add about 1,000 coolies		1,000
Total number of men in force		8,594

The men composing this force are principally from Honan and Anhui Provinces, though there are a few from Shantung and Chihli Provinces. They serve from about 20 to 40 years of age; the average at present seems to be about 28. They appear

contented and well fed. They receive rice and vegetables daily and meat on the first and fifteenth of each month.

Their pay is 3.3 taels per month, with free food.

They have the *usual punishments;* that is, beating with the bamboo for the ordinary offenses and more barbarous for grave offenses.

Uniforms given them annually are three in number, one unlined, one lined and one wadded. The first two are of dark blue with an overjacket of black bordered with red. The wadded is black and is worn with a yellow sash around the waist.

Every two years they are given a sheepskin lined overcoat.

They wear turbans and long Chinese cloth boots, which they buy themselves.

Arms are partly Mauser and partly Mannlicher rifles. The cavalry have Mauser or Mannlicher carbines.

They *drill* twice a day, two hours each time. The drill is a mixture of modern and old-time Chinese movements.

This force may be classed as a body of irregular troops, modern armed and partially modern drilled, without having a modern organization. They are not of equal value to the Lu-chun troops and probably are not equal to the best of the Hsun-fang-tui.

A recent notice in the newspapers states that the present General Chang-kwei-ti, who succeeded General Ma-yu-kun on the latter's death about six months ago, is in consultation with the War Board as to the advisability of converting this force into regular Lu-chun troops. It is proposed to form a division, establish a school and hospital.

Lu-chun. Before taking up directly the organization of the Lu-chun it will be interesting to note certain features of the organization act or regulations of the Lu-chun.

"*Classes of Troops.* The army shall be divided into three classes of troops as follows:

1st. The regulars, to be composed of *bona fide* natives (of the place where enrolled) having family connections. These are to be assembled and drilled, shall receive full pay, and at the expiration of three years shall leave the ranks and return to the place of their original registry.

2d. The reserves, to be composed of the regulars who have served their three years and been retired from the ranks. They shall be drilled at stated periods, shall receive a decreased salary, and at the end of three more years shall be retired.

3d. The second reserve, to be composed of the reserves who have served their terms as such and been retired. These shall also be drilled at stated periods, shall receive a still further reduced pay, and at the end of four years shall be retired as private citizens."

For mobilization it is provided that when sent on service the men and weapons of each division may be increased as follows: To each section of infantry may be added three squads, the men to be drawn from the reserves and the chiefs of squads from the regular forces. The number of fighting men in the artillery shall not be increased, but six guns may be added to each battery. The additional men necessary for the transport of ammunition and so forth shall also be brought from the reserves, and if these are insufficient the second reserves may be drawn upon. As for the cavalry and engineering corps, their training is a somewhat more difficult matter, and it is fitting that they should always be in readiness, so that it may not be necessary to add to their numbers in time of war. As for the baggage corps, men may be added according to the distances to be traversed and the difficulties of the road. They should be drawn from the reserves and the second reserves, and if the number of these is insufficient, transport coolies may be engaged.

The Reserves—How Formed. After three years' drill and instruction the regular troops shall be given a certificate and shall be assisted to return to their native villages, where they shall be registered as reserves, receiving each month a pay of one tael. Each year in the tenth moon the General commanding the forces of the province shall select and send an officer to each prefecture and department to conduct the drill. One month shall be taken as the standard, and during this month the men shall receive the same pay as the regulars. Three years after the return of the regulars to their native villages another certificate shall be given them classifying them as second reserves. They shall receive

half of the pay of the reserves. In the second and fourth years of their service as second reserves they shall be brought together for drill according to the regulations for the drill of the reserves. In the first and third years they shall be exempt from drill. At the end of the fourth year they shall be retired as private citizens.

Their pay shall cease and they shall not be liable to be called out, and a final certificate shall be given them.

If afterwards hostilities should break out, those under the age of 45 who may wish to enlist may present their certificates and be placed on the payrolls.

Enlistments. The date of enlistment having been fixed upon for any given district, and the place of examination decided upon, proclamations should be issued beforehand setting forth the rules of enlistment. On the date appointed an officer shall be deputed to act in concert with the prefect or intendent of the department and direct the district magistrates to select and make the levy according to the pattern (rules) set forth. These rules shall be as follows:

1st. The age limit—this shall be between the ages of 20 and 25.

2d. Physical requirements. The height must be four feet and eight inches or over, by the tailor's measure. The stature of the people of the south being on the average somewhat less than in the north, in those districts two inches may be deducted from the requirement. Those who have any of the five senses impaired, those of general physical disability, and those who have diseases of the eyes or internal diseases shall not be accepted.

3rd. Strength. Each man shall be required to lift 100 chin or upwards. (One chin equals 1 1/3 pounds.)

4th. Origin. The applicants must be indigenous and with family connections, and at the time of their enlistment should make a statement of the members of their family for three generations, their place of residence and the number of their "sieve and ladle marks." (These are the marks on the ends of the fingers and are much used by the Chinese in identifications.)

5th. Character. Opium smokers and those who do not

habitually attend to their duties or who have been before the courts for violations of the laws shall not be accepted.

Those who are up to the mark shall be entered upon the lists, of which a copy shall be made and turned over to the local authorities for record. The aforesaid deputy shall issue daily rations according to the record (register). When the time comes for the men to be detailed for duty extra allowance shall be made sufficient to cover their necessary expenses.

Moreover, a written certificate shall be given to the family of each of the enlisted men, to which shall be affixed the seal of the bureau of military preparations. At the end of three months after their organization, when the soldiers have been divided into classes, to be paid according to their rank as chief of squad or private, the pay office shall appoint a deputy to take charge of a certain amount, which shall be deducted every six months from the pay of the men. These deputies shall, in concert with the local authorities of the place, issue a proclamation and fix a date, ordering the representative of each family to appear with the certificate and receive in person the amounts due. It is further provided for replacing certificate, if lost, for the family writing to the soldier in case the deputy does not pay them, etc., etc. There are also certain special privileges granted to the family of the enlisted men, such as: certain exemptions from land taxes; local magistrates are enjoined to have special care and watch over them to see that they are not oppressed and cheated; if members of the family become implicated in a lawsuit they may be granted the privilege, accorded a student of the Imperial Academy, of sending a representative to present a petition, etc., etc.

Forming the Ranks. Whenever new troops are levied there should first be enlisted, to the number of one-fifth of the entire battalion, young men with some knowledge of the written character, and these should receive the pay of first-class privates. After these have been drilled according to the regulations for a period of five months, some shall be selected and promoted to be assistant chiefs of squads, and the remainder shall continue to serve as first-class privates. When according to the registry

of the entire battalion the number shall be filled up, the men shall be divided into squads and arranged in files, and the aforesaid assistant chiefs of squads and first-class privates shall be charged with the responsibility of the drill. After three months more the assistant chiefs of squads shall be promoted, if found worthy, to be chiefs of squads, and the first-class privates shall be selected to fill the places of assistants thus left vacant. All the new soldiers entering the ranks (after the first enlistment of one-fifth) shall be registered as second-class privates, and at the end of five months selections may be made from them to become first-class privates. As they gradually become accustomed to the drill those who manifest extraordinary ability shall be made chiefs of squads. At the beginning, when the files are being made up, there are differences in the time of entry, therefore there are distinctions in grade to be made. But at the expiration of ten months, when the register shall be filled up according to the new regulations, at the proper time the commanding officers shall examine into the relative merits and demerits, diligence or remissness of the men, and shall promote or degrade accordingly. Thus the privates will be brought in time to try to excel each other and to present the finest possible appearance.

The power of promotion from second-class to first-class private may rest with the company commander, but that of promotion from first-class privates to assistants and chiefs of squads should rest with the commanding officer.

Instruction and Drill. In the government of troops the first thing to be considered is instruction, and the second is drill; the instruction is for the purpose of developing the intelligence of the soldiers and strengthening their character. The drill is for the purpose of refining their skill and increasing their ability and strength. * * * It is to be feared that all officers will not be able to combine the duties of instruction and drill. Therefore, in every regiment there shall be established temporarily a drill officer, who, under the general direction of the commanding officer, shall transmit to the junior officers instruction in drill and discipline and the movement and direction of troops.

Inspections are provided for, every three years by an Imperially appointed inspector; every year by the Viceroy or Governor; very frequently by the division or corps commander.

Rewards and Encouragements. In the organization of new forces the matters to be provided for are numerous and difficult. But after the regulations have been brought to completion and instruction and drill have been gradually imparted, until the soldiers may be classified as fighting men, the Tartar Generals, Viceroys and Governors may petition the Throne for the appointment of a high official, who, according to the detailed regulations for inspections, shall make a zealous examination of the forces. If the instruction and drill have not been thorough the time shall be extended for further drill. If the troops be found up to the mark in all respects, showing the results of careful training, then in consideration of extraordinary merit a request for reward may be presented. The limit of the number to be brought forward for reward shall be 2 in every 100 to be presented to the Throne, and 3 in every 100 to the provincial authorities. The posts held by those thus presented shall be entered on the register by the Military Commission and the Board of War, and when vacancies occur in the posts above them they shall be given the preference in making the appointments. Afterwards, these recommendations shall be made, within the same limits, at the regular triennial inspections. But this provision (that is for the above rewards) is to apply only to the initial periods of the new organizations.

Punishments are provided for grave offenses according to military law; for minor offenses and neglects of duty they are to be administered by the commanding officers, by deductions of pay, by being placarded in the camp, by having the offenses entered up and punishment increased according to the number of times the offense has been committed, etc.

In case of desertion provisions are made for punishment of the offense, also for hunting out the deserter. In this case the family, the native village and the local magistrate of the deserter are all to be punished, especially if the deserter returns to the place of enlistment. In the latter case it is made incumbent upon all to at once seize him and report his presence to the authorities.

A system of pensions is to be provided for. Those who die in battle (their families) are placed first; then those who are badly wounded in battle; then those who die in the public service; lastly those who have worn out by long service.

In making payments it is provided that the pay officer shall weigh out the packages of silver, and then an officer shall determine by drawing lots the order in which the battalions shall be paid. The pay officer then goes to the drill ground and the battalion being paraded, he again weighs out and examines the packages of silver.

The battalion officer who receives them shall write in the receipt distinctly the words "not the slightest shortage."

The pay officer is charged with inquiring carefully into the cases of absences on account of sickness or for other cause. The battalion officer is charged with making accusation in case of any shortage of funds. Thus it is sought to establish checks and guards against frauds.

Uniforms for winter shall be of black color and for summer dust colored. Officers shall buy their own, but the soldier's shall be furnished by the government.

Special rules are laid down for saluting the flag, for the ceremony of presenting the colors, etc.

Adaptations. These newly adopted regulations are intended to be put in practice in every province. But conditions differ somewhat in different provinces, and it is consequently necessary to provide for certain alterations and adaptations. For example: If in the certain province there be much level and dry land, then the artillery may be increased, large carts may be used in transportation, and additions may be made to the cavalry force, for instance two regiments or an entire brigade to a division. In a mountainous province mountain guns may be used, and pack-horses employed in transportation as well as coolies and wheel-barrows. In marshy country (many canals) it may be advantageous to make use of boats, or to have burdens carried on the backs of men. In the transportation of mountain guns pack horses may be used, and where the horses cannot go use may be made of the men.

As for provisions for the men, provender for the horses, clothing, shoes and all necessary articles for use, these should be purchased according as prices are high or low in the different districts, care being taken that they are sufficient for use and that the quality is good.

Organization of the Lu-chun. Though the regulations provide for the formation of army corps when necessary, the highest unit so far formed is the division. A division in the Chinese Army consists of: Two brigades of infantry, one regiment of cavalry, one regiment of artillery, one battalion of engineers, one battalion of transport, one company of the sanitary corps (hospital), and in some divisions one balloon section and one machine gun section.

A brigade of infantry consists of two regiments of infantry each to three battalions of four companies; each company is divided into three sections of three squads each; each squad consists of 14 men; viz: one sergeant (squad leader), one corporal (assistant squad leader), four first-class and eight second class privates. The sergeants are called chiefs of squads and the corporals assistant chiefs of squads.

We therefore have the squad of 14 rifles, the section of 42 rifles, the company of 126 rifles, the battalion of 504 rifles, the regiment of 1512 rifles, the brigade of 3024 rifles, the division of 6048 rifles.

Each company has one captain and three lieutenants. Each battalion has one commanding officer, one drill instructor, one quartermaster, one surgeon, and one assistant surgeon. There are also writers, clerks, signal men, orderlies, nurses, artificers, gunsmiths, cooks, coolies, drivers and 36 supernumeraries (these being soldiers ready at the barracks to take the place of men sick, on leave, etc.). All the above mentioned must be added to the strength of the battalion of infantry, and that brings its strength up to, for the total of men, 659; the regiment will be 659 times 3 plus 27, 2004; the brigade will be 2004 times 3 plus 28, 4036; the numbers 27 and 28 added to the strength of the regiment and brigade represent the number of men in the headquarters of those organizations.

A regiment of cavalry consists of three squadrons of four troops or companies each; each company is divided into two platoons of two squads of 14 men each.

We therefore have the squad of 14 sabers, the platoon of 28 sabers, the company (troop) of 56 sabers, the squadron of 224 sabers, and the regiment of 672 sabers.

To the strength of the squadron there must be added the extra men, as in the case of the infantry battalion, including 16 supernumeraries and 32 mafus or grooms, which gives us for the total of the squadron 363 men.

The regiment will be 363 times 3 plus 27 (headquarters men), equals 1116 men.

A regiment of artillery is composed of three battalions of three batteries each of six guns. Each battery is divided into three sections, each of three squads of 14 men. We therefore have the squad of 14 men (fighting), the section of 42 men, the battery of 126 men, the battalion of 378 men.

To this add the extra men as for an infantry battalion, including 27 supernumeraries, 31 servants, 6 stablemen and 42 mafus (grooms), and the total is 568. The regiment would be 568 times 3 plus 27 (headquarters men), equal 1731 men.

The engineer battalion is divided the same as the infantry; that is, four companies of three sections of three squads of 14 men each. We have the squad of 14 rifles, the section of 42 rifles, the company of 126 rifles, the battalion of 504 rifles. In the engineers the total of extra men to be added is 167; this includes 36 supernumeraries and 40 servants, and gives for the total of the battalion 671 men.

The transport battalion has practically the same organization as the engineer battalion; the total is 748 men. In the transport battalion there are 72 baggage carts, 266 mules and 101 riding animals.

The sanitary company. The organization of this service seems to be at present more or less experimental. It is apparently gradually expanding into what might be called a sanitary battalion. In one division (during the maneuvers last fall) there was seen a company of 97 men, while another division had a company of 257 men, divided into two distinct parts. One-half had supervision of the hospital, care of wounded, etc., while the other half was charged with the overseeing and assisting in the sanitation of the camps, including the cleaning of the picket lines. Just how much of this sanitary policing is actually done by the men of the sanitary company, and how much done by the men of the camp under the supervision of the sanitary men, I have not been able to determine.

Balloon section. There are several of the divisions supplied with a balloon and section of fifty men for handling the same and its appliances. It is not believed that all the divisions are to be so equipped. It is probably the intention to have a balloon with each division or corps called upon to act independently. At all the maneuvers they now give each side one balloon and allow one for the umpires directing the maneuvers.

Machine gun section. Each division is to have a machine gun company or section. This is also in the experimental stage. In the maneuvers last fall one division had a detachment of 120 men, while the other had 132 men. Each detachment had 12 machine guns. One side had 12 Rexers, while the other side had 8 Maxims and 4 Japanese.

Summing up the above organizations, it gives us for the total men of a division: Infantry, 8072; cavalry, 1116; artillery, 1731; engineers, 671; transport, 748; sanitary, 257; balloon section, 50; machine gun section, 130; total, 12,735, or in round numbers 12,500 men for a division. This is the number given as the strength of a division in the organization act of the army. Since the act was issued there have been some changes in the sanitary company, and also the addition of the balloon and machine gun detachments, giving the above difference in figures.

There are eight divisions and twenty separate brigades organized, the divisions being stationed one in each of the provinces of Manchuria, Shantung, Hupeh, Kiangsu, and four in Chihli, the separate brigades being scattered throughout the other provinces.

The strength of the above would be about 180,000 men; that is 8 divisions at 12,500 men each, and 20 brigades of infan-

try at 4036 each. Allowing for organizations not being up to strength, and for the fact that the organization has not been completed in all of them, a fair estimate of the available strength would be 150,000 men. Those brigades not definitely numbered have not as yet had the Imperial inspection and been definitely received into the Lu-chun.

The majority of the troops in each province are stationed at or near the capital of the province.

In November, 1907, Imperial authority was given for expanding the Lu-chun to 36 divisions.

Plans have very recently (during the last four months) been made for a further expansion to 45 divisions, but that will be very far in the future. A total of five years was allowed for the complete organization of the 36 mentioned above; due to lack of money, this organization will not be completed within the time specified.

Organizations—how numbered. As noticed above, the divisions are numbered serially as 1st, 2nd, 3rd, etc. The same order has been followed in numbering brigades, regiments, engineer battalions, etc. The grouping together in higher units has been perfectly logically followed out—the simplest way possible.

The first and second brigades form the first division.

The first and second regiments of infantry form the first brigade of infantry, etc. This gives us the first four regiments of infantry to the first division.

The regiments of cavalry, artillery, battalions of engineers, etc., have the same number as the division to which they are assigned. The first division therefore is composed of the first and second brigades of infantry, the first regiment of cavalry, the first regiment of artillery, the first battalion of engineers, the first battalion of transport, etc., etc.

Distinguishing colors. The different branches of the service are distinguished by colors, usually worn on the shoulder strap and cap band.

For infantry the color is red; cavalry, white; artillery, yellow; engineers, blue; transport, crimson; sanitary, green.

Sergeants, corporals, first and second-class privates are indicated by marks or chevrons on the upper part of the right arm, the chevron being the color of the arm of the service. There are three marks or strips for a sergeant, two for a corporal, one for a first-class private, and none for a second-class private.

Officers are divided into three classes or grades, general officers, field officers and company officers. These classes or grades are distinguished in three ways:

1. General officers have a small red button on the front part of the forage cap, field officers a blue button and company officers a white button.

2. General officers have three stripes around the cap, these stripes being in the cap band and of the color of the service to which the officer belongs; field officers have two stripes, and company officers one stripe.

3. General officers have three buttons (in horizontal line) on the wrist of the blouse or coat; field officers have two and company officers one. These buttons are of brass.

Rank in each grade is distinguished by the number of stripes on the wrist of the coat or blouse. Lieutenant General has three, Major General two and Brigadier General one. A Colonel has three, a Lieutenant Colonel two and a Major one. A Captain has three, First Lieutenant two and Second Lieutenant one.

On the service uniform the stripe is black. On the dress uniform it is also black. On the full dress uniform it is either silver or gold. On the full dress uniform the buttons on the wrist are replaced by a narrow cord or braid laid on in the form of an Austrian knot.

Examples: An officer with three buttons on his wrist and three stripes would be a Lieutenant General; if he has two buttons and three stripes he is a Colonel; if he has one button and three stripes he is a Captain.

Officers of the General Staff have on the lower part of the sleeve of the coat, but above the other insignia, three interwined circles of gold, silver and red braid.

Pay. The pay of the Lu-chun is very good, and, relative to that received by the laboring classes of the country, compares most favorably with the pay of armies in foreign countries.

All pay and allowances are given, in the following table, in taels per month, the tael at present being worth about 65 cents gold, in United States currency:

Commander of an Army Corps, pay 600; allowances, 1,000.

Commander of a Division, pay 400; allowances 600.

Commander of a Brigade, pay 250; allowances 250.

Commander of a Regiment, pay 200; allowances 200.

Commander of a Battalion, pay 100; allowances 140.

Commander of a Company, pay 60; allowances 20.

Aides-de-Camp to Division Commander, pay 100; allowances 100.

Aides-de-Camp to Brigade Commanders, pay 80; allowances, 80.

First-class Scribes, pay 60.

Second-class Scribes, pay 40.

Third-class Scribes, pay 30.

When a Brigade is stationed alone the commander's allowances are increased by 200 taels per month. When a Regiment is stationed alone the commander's allowances are increased by 100 taels per month.

"From the salary of officers no deductions will be made, but they may be made from the pay of privates, artisans," etc., etc. Deductions from soldiers' pay sent to their families is one tael per month. The deduction made on account of food varies from $1.50 to $3.00 (Mexican) per month (from 1 to 1½ taels), depending upon the section of the Empire in which they happen to be stationed.

Pay of Quartermaster Sergeant	30
" " Ordnance Sergeant	30
" " Veterinarian	30
" " Signal Sergeant	16
" " Clerks (three grades)	24, 16, 12
" " Chief of Squad	5.1
" " Assistant Chief of Squad	4.8
" " First-class Private	4.5
" " Second-class Private	4.2
" " Chief Artificer	9.0
" " Orderlies (headquarters) mounted	8.4
" " Special Guards	4.5

" " Signalmen	4.5
" " Musicians (three classes)	10.5, 8.4, 6.0
" " Gunsmiths and Blacksmiths	6.6
" " Drivers, Farriers, Carpenters	4.5
" " Servants, Cooks, Mafus	3.3

"In the expense incurred by the soldiers there is a difference between movement and inaction. When foreign countries are preparing for war their allowances are usually doubled. The pay received by Chinese soldiers is not great to begin with, and at present the price of silver is low and that of commodities unusually high. Outside the cost of food and the allowances made to his family, together with the shoes, stockings, bands, etc., supplied by himself, there is but little necessary expenditure, and the soldier's pay is, in time of peace, sufficient. But when the troops are transported to some other place in preparation for war a greater number of shoes and stockings are required and the cost of food is considerably increased. It is not expedient to provide insufficiently for those who are devoting their lives to the service of the country. For the present let it be fixed that when on active service the Chiefs of Squads and Privates shall receive an additional pay of one tael per month, to be suspended when they are once more at a permanent station."

Pay of Chinese workmen of various grades. On Government works, public buildings, etc., now being carried on in Peking, the following rates and rules pertain:

"Chinese workmen are paid by the day and feed themselves. They start work about half an hour after daylight and stop as it begins to get dark; but with the many allowed rests during the day they do not work over eight hours per day, excepting in an emergency." It is needless to add that when they do work there is no rush, for they are the most deliberate of mortals.

Daily Wages:

Carpenters	50	cents	Mexican
Bricklayers	50	"	"
Plasterers	50	"	"
Paperers	50	"	"
Stone Cutters	50	"	"
Foremen	$1.00		"

Ordinary Coolies	30	cents	Mexican
Boys (helpers)	15	"	"
Wood Sawyers	45	"	"
Teamsters	40	"	"
Blacksmiths, first-class	$1.00		"
Blacksmiths, second-class	60	"	"

For other classes the following wages are paid per month:

Policemen	$6.50	to	$9.00	Mexican
Water carriers	5.50	to	6.50	"
Cart drivers	6.50	to	8.50	"
Ricksha coolies	7.00	to	8.00	"
Night watchmen	6.00	to	7.00	"
Gatekeeper, doorkeeper	7.00	to	8.00	"
Coolies (collectively)	5.50	to	8.00	"
Farm hands	5.50	to	6.00	"

(But in this case the owner of the farm must feed the hands.)

These prices prevail in and around Peking, where expenses of living are high and wages are fixed accordingly. In the country towns, from which most of the soldiers are drawn, wages are from ¼ to ½ less than the above, depending upon the section of the Empire and the distance from coast ports.

The uniform adopted for the Lu-chun has been modeled after the uniform of foreign armies. There are furnished each soldier annually one or two khaki unlined and one lined; one or two blue lined and one wadded, and perhaps in the north one fur lined. The blue of the men is a very dark blue, while that of the officers is somewhat lighter (in color), and allows an officer and private to be distinguished at considerable distance.

The forage cap has a sort of bell-shaped flaring crown with a glazed visor, and bands or stripes of color of the arm of the service.

Shoes are usually russet leather. The pattern so far used is not very satisfactory. It is a rather low-cut shoe, with a sort of cloth stocking top that wraps close around the ankle under the puttee or legging. They have also the Chinese cloth shoe or boot. A soldier receives one pair of leather and two of cloth annually.

Leggings of canvas or a bandage puttee of cotton, though

I have seen a few woolen ones, are furnished. The canvas legging is very light and wrinkles easily. The officers much affect very high russet leather boots for service and patent leather for dress wear.

Overcoat for both officers and men is of dark blue cloth. The badges of rank are put on the sleeve of the overcoat also. There has recently been adopted at Wuchang a handsome khaki woolen overcoat, which will prboably become general in the Army.

Equipment. Canvas or leather pack of Japanese model, canvas haversack, water bottle, Japanese pattern mess tin, leather waist belt with usually three cartridge pouches, each carrying 30 rounds. Overcoat is carried rolled and strapped on top the pack. Intrenching tool is carried by all the men; in each squad there are usually two axes, four picks and eight spades or shovels; in some squads I have seen one axe, six picks and seven shovels.

Rifles. For the most part the Lu-chun is armed with Mauser rifles and carbines, but not of uniform make or caliber. Many have been bought abroad, but more have been made at the Shanghai and Hankow arsenals. These latter are the '88 model, 7.9 mm. The bayonet is the knife pattern, carried in scabbard on the belt. There is a small leather loop on the side of the belt that passes over the handle of the bayonet and prevents it slipping out of the scabbard and also prevents the scabbard having an excessive swinging motion when on the march. There are several regiments armed with the new model Japanese rifle; also many with later models of Mauser rifles.

The entire weight carried by the soldier is 40 Chinese cuties; that is, 54 pounds.

Drill. The men drill two hours twice daily. The drill is a sort of mixture of Japanese, German and Chinese movements but more closely follows the Japanese.

Musketry or target practice. Very little done at this so far, because of the large amount of ammunition required and the expense attached thereto. Many of the division stations are now provided with target ranges; the distance at which prac

tice takes place is generally 400 meters and less. The greatest amount of ammunition that I have heard of being allowed is 120 rounds per year per man, this being fired 10 rounds per month throughout the year.

Athletics. Great attention is paid to training in athletics—that is, to the use of athletic apparatus, such as ladders, rings, horizonal bar, parallel bars, throwing weights, jumping and pole vaulting. The Chinese soldier is especially fond of this sort of work and excels at it. I have not so far heard of any contests between division or garrison teams. Intercollegiate athletic contests have been held for several years past in China, but I do not know of the military colleges participating.

Intrenchments. Considerable instruction seems to be imparted the men with reference to field entrenchments, screening them with brush, etc., but they do not do so well in the location and manner of occupying them.

Guns. These are divided into mountain and field. As stated above there are six to a battery, and as there are nine batteries to a regiment, it gives 54 guns per regiment. In the north these are generally 18 mountain and 36 field. But in the central and southern parts of the country, where there are few or no roads, the proportion is usually 36 mountain and 18 field. It is quite probable that some of the divisions will only have mountain guns. The most of the guns are the Krupp 57 mm and 75 mm, but there are quite a few batteries of Japanese field pieces and some of the French Creusot gun.

It will at once be noticed that the varieties of rifles, field, mountain and machine guns that the army has render the question of the supply of ammunition a very difficult one. It seems that no uniform type of rifle or gun has as yet been adopted.

War Office. The Central Government War Office, or War Board as it is generally called by foreigners, the Chinese name being Lu-chun Pu, is of course located in Peking.

This Board consists of a President, two Vice-Presidents, and the necessary bureau chiefs, clerks, etc. Prince Ching, the Prime Minister, is nominally the head, under the title of Comptroller General. The Board is really administered by the actual President, His Excellency Tieh Liang. General Yin Chang, just appointed Minister to Germany, has until very recently been the Vice-President and chief assistant, as well as performing the duties of an Inspector General. The office of Second Vice-President has been vacant for some time. There is also a General Staff, the duties and divisions of which are not yet well settled. The various bureau chiefs usually have the rank of Colonel only.

In each Province there is also a provincial war board, and as nearly all the troops are under the command of the various Viceroys, it is there that most of the work is done. These provincial boards are divided into four departments: 1, Operations Department; 2, Training Department; 3, Administration Department; 4, Supply Department.

The Governor or Viceroy is the Commander-in-Chief of the troops of a province.

Mobilization Scheme. Upon the issue of the order for mobilization, the First Reserves must bring each of the divisions from a peace footing to war strength. They must then form a Reserve Division and a Reserve Brigade—in all three brigades. These formations have the same numbers as their corresponding Regular Divisions (for example, 5th Division, 5th Reserve Division, 5th Reserve Brigade). The regiments of the Reserve consist each of two battalions. If there are not sufficient men in the First Reserve, then the Second Reserve must be drawn upon.

The Second Reserves are required first to complete the previously mentioned First Reserve formations, and then to form three independent Depot Battalions, one for the Regular Division, one for the Reserve Division and one for the Reserve Brigade. These Depot Battalions have 300 men in each company, are divided into four companies, and have a total of 1200 men to the battalion.

As a general principle each Depot Battalion fills vacancies in its own Division or Brigade only.

With the issue of orders for mobilization the commander of Depot Troops draws from the recruits eligible for service dur-

ing the following year, a number double that required in peace. These recruits are trained with their depot battalions, and from there are used for recruiting purposes.

The Depot Battalions are formed in the locality of their Regular Divisions and remain there during the war.

Officers. With the issue of orders for mobilization the Regular Divisions which have a full complement of officers must send two officers per company to the Reserve formations.

In addition two non-commissioned officers in each company must be promoted to commissioned rank; two-thirds of these new officers, moreover, will be sent to the Reserve formations of their respective divisions.

One-third of the officers of the Regular Division must be sent to its Depot Battalion. In corresponding manner one-third of the officers of the Reserve Division and Brigade must be sent to their respective Depot Battalions.

With the issue of orders for mobilization the pupils of the senior classes of the military schools must be commissioned, in the event that they have been at least six months in this class. These will be ordered to the Depot Battalions of the Regular Division, Reserve Division and Brigade; but remain at the disposal of the Commander of the Depot Troops, who employs them to fill vacancies in their corresponding Divisions or Brigades.

The organization act provides, "on active service each infantry section receives an additional three squads from the First Reserve"—this means that each section will be doubled. A battalion has 504 fighting men and will therefore require 504 reservists; a division of 12 battalions will require 6048 men from the First Reserve. After the First Reserve has found 6048 men for the Regular Division, it will have to form a Reserve Division (regiments of two battalions each, that is 4032 combatants, besides a Reserve Brigade, another 2016 combatants. This makes a grand total of 6048, in addition to those furnished the Regular Division).

As service in the First Reserve is three years, the same as with the active troops, the scheme seems impossible of accomplishment. As service in the Second Reserve is for four years only, and there is bound to be wastage by death and incapacity, it does not seem that the Second Reserve could ever be stronger than the First Reserve. If the First Reserve is not sufficient it must call upon the Second.

Between the two they are therefore required to furnish 6048 men to the Regular Division, 6048 men to the Reserve Division and Brigade, and an additional 3600 men for the three Depot Battalions. It is apparently impossible for them to do this.

Military Schools. In every provincial capital there is or ought to be one primary military school, where cadets of the official class, usually from 15 to 18 years of age, are trained for the duties of officers. They usually are natives of the province and go through a three years' course.

Usually one foreign language is taught among their other studies. This is more often English, then German and then French, sometimes Japanese. After three years at this primary school it is intended that the cadets should go to the next higher, or what is known as the Middle School.

It is proposed to have four of these middle schools or colleges, to be located at Paoting-fu, Wuchang, Nanking and Canton or Sian-fu. None of these has yet been started.

A final course is to be spent at the Military University at Peking. This has not been started.

At present when the cadets leave the primary school most of them become officers at once, though quite a few go to Japan for a short time.

Though the regular middle schools have not been started, there is at Paoting-fu what is known as a quick course or short course middle school, which has some 1100 students sent there from the various provinces, after finishing the primary schools in these provinces. The term for this school is 2½ years. It is a temporary substitute for the regular middle school that is to be located at Paoting-fu.

The Military School at Wuchang. There is at Wuchang, the capital of the Viceroyalty of Hupeh and Hunan, a rather

unique military school that I recently had an opportunity of visiting. It is a school started some years ago by the Viceroy, and is not counted as a part of the regular Lu-chun system. It is still the leading military school at Wuchang, though the Lu-chun primary school has also commenced. The course is for three years. The plant of the school is sufficient to accommodate 3000 day students. There are at present 1000 day students in attendance. After completing the course the best of them are commissioned as officers and the rest are appointed non-commissioned officers. All students are soldiers selected from the garrisons at Wuchang. The youngest, brightest and best developed mentally and physically are selected and detailed to attend the school. They live in the barracks, but report each day for school duty. At the barracks they get military discipline and necessary drill. There are five general classes or subjects taught in the school, viz: Topography; paymasters' and supply officers' duties; military science and allied subjects; navigation—for the service of the river gunboats; sanitary instruction.

There are ten Japanese and two German instructors employed, in addition to a large staff of more or less foreign educated Chinese. Many of the latter teach certain primary classes in arithmetic, history, etc., for the benefit of the men who are a little behind in such subjects. The work done by the class in topography is very fine; it would be creditable work in any country. We saw some of the classes at examination. The questions were written on the blackboard and the students had to write out their answers.

The classes, or rather sections of classes, undergoing the examination numbered from 55 to 65 in each room. Military ordered prevailed in the class rooms. The class leader sat nearest the door, and as soon as we entered he at once arose and called the class to attention. All stood up and assumed a correct military position.

A report made to the Throne about a year ago divided the primary schools in operation in three classes, as follows:

1st class, in Chihli, Shantung, Heilungchiang, Kiangsu, Kiangsi, Shansi, Honan, Kweichou, Shensi, Yunnan and Fengtien.

2nd class, in Hupeh, Hunan, Anhui, Szechuen, Souenyueng, Kirin, Kwangsi and Kwangtung.

3d class, Chekiang, Fukien, Sinkiang (New Dominion) and Kansu.

Hsun-fang-tui. These are the present day representatives of the old-time provincial troops; they are and always have been independent of the Lu-chun Pu in Peking. They are in some measure regarded as the special property or appanage of the Viceroy or Governor. They exist in all provinces of the Empire. As said above, they would be more properly called constabulary rather than regular troops. Their functions are very similar to those performed by the constabulary in the Philippine Islands. The War Board has designated them as forming the second line of defense of the Empire until the reserves of the Lu-chun are fully organized. For that reason they have become of more importance and an effort is being made to get them all more or less uniformly organized, equipped and drilled. In some places they have been partially trained according to modern methods, but their organization is such that they are in no sense a homogeneous force, and it is difficult to estimate the real value of them. Probably the best they have ever had were the provincial troops of Li-Hung-chang just prior to the Japan-Chinese War of 1894-95. These troops were modern armed and drilled by German instructors, but they were not in any sense really national troops. There is a remnant of this old army in Chihli Province and also in Manchuria.

The reorganization of the provincial troops commenced some eighteen months ago. They generally have no organization into regiments, brigades or higher units. They are formed into "camps" or battalions and then grouped into territorial districts. These camps are divided into three companies. The company consists of one Captain, one Lieutenant, 80 privates and the necessary buglers, orderlies, cooks, etc., making a total strength of 97 to the company. This gives to the battalion (camp or Ying, the Chinese name), with the commanding of-

ficer and necessary headquarters men, a strength of 301.

The cavalry camps are similar to the infantry in organization, except that each company has only 40 privates and the battalion a strength of 181.

They have no regular organized artillery.

Districts. A province is generally divided into five districts called the right, left, front, rear and center. Each district has from four to ten camps or battalions. In these districts the camps are generally split into small detachments and occupy many stations so as to cover the roads and protect the villages, the main duty of these troops being to chase down robbers; also to carry the government messages, where they are cavalry. Practically all of them have modern breech-loading rifles, a few years behind the times, but these small detachments seldom, if ever, drill.

In many places the cavalry is the irregular cavalry, occupying permanent stations and forming part of the regular inhabitants.

The pay of the Hsun-fang-tui varies in provinces, but is generally less than that of the Lu-chun, the pay of privates in most provinces being 3.6 taels per month and that of the irregular cavalry from 7 to 8 taels, but they must own their horse and find his food.

The men wear the old style uniform, generally dark blue cotton cloth, with black turbans (long pieces of cloth twisted around the heads), which makes a very becoming uniform.

The turban especially is the most becoming part of any uniform seen in China; it looks far better than the foreign style forage cap adopted in the Lu-chun. Chinese cloth boots or shoes are worn, though in some places the men have a Chinese pattern boot made of leather.

Many of the Hsun-fang-tui are quite reliable troops and usually have courage enough, though not possessing the technical skill and instruction. At the recent mutiny at Anking, Anhui Province, it was the Hsun-fang-tui that stood true to the Governor and enabled him to quell the mutiny of the Lu-chun troops.

The Hsun-fang-tui of Hupeh Province has recently been much strengthened by having some of the reservists of the Lu-chun of that province enrolled in it.

The Viceroy of Manchuria has recently submitted a memorial to the Throne about the Hsun-fang-tui of Fengtien Province and the expenses of maintaining the same. He quotes for them the same rate of pay as the Lu-chun. As they cost therefore as much as the Lu-chun, man for man, and are not as efficient, there seems to be no particular reason for maintaining them. It may be that the Lu-chun, if dispersed in as small detachments as the Hsun-fang-tui often is, would become worse than the latter and would not get along so well with the people of the country.

It is understood that when the reservists of the Lu-chun are complete in number, the Hsun-fang-tui will be converted into police and cease to exist as soldiers.

There is one more small force that is unique in its formation and the duties that it is supposed to perform, and it may be of interest to mention it. That is the River Police of the Yangtze. Most of the troops in the Yangtze Valley being provincial and not able to pursue robbers beyond the limits of their province, rendered necessary for the proper police of this great river the organization of a force independent of the provinces. This force is more naval than land.

Organization. This consists of 22 battalions of 3 to 5 companies of 7 to 8 boats each, as follows: Five battalions of 43 boats each, or 215 boats; seven battalions of 30 boats each, 210 boats; ten battalions of 23 boats each, 230 boats; total, 655 boats.

Each boat carries 14 men, including a sergeant and corporal, and has a commanding officer who ranks from Major (in the case of 44 of them, being commanders of half battalions) to 2d Lieutenant. This gives for the strength of the organization a total of officers and men, 9,849.

The boats are the old-time river war junks. They are heavy, clumsy wooden affairs, poled, sailed or towed by the men and usually gay with bright banners and flags. Some of

them, probably not more than 65 to 80, are armed with Hotchkiss one-pounders (one to a boat), mounted on naval tripods. The one we inspected carried only 90 rounds of ammunition for the Hotchkiss. Each boat also carries seven Mauser rifles and 1,000 rounds of ammunition.

The men receive 3 taels per month pay and three uniforms per year. Two uniforms are black and one red; all unlined; they wear turbans and cloth boots or shoes. They have little or no drill and live a rather lazy, care-free sort of an existence. Their headquarters are in the town of Tai-ping in Anhui Province.

On the boat we inspected the Hotchkiss and rifles were in a very clean condition, but all the parts were badly pitted with rust marks; evidently the former commander of that boat had been careless.

There are various other special bodies of troops, the organization of which is old. Among these may be mentioned the troops under the control of the officials charged with the superintendence of the grain and silk tribute, the troops of the salt administration, the railway guards, etc. Some of the railway guards are the equal of the Hsun-fang-tui.

Imperial Guard Corps. The latest organization to be attempted is the formation of a Guard Corps similar to that maintained in European countries." It is contemplated to ultimately make this into an army corps of two divisions. But for the present, due to the lack of money, lack of officers, etc., it has been decided to organize only one regiment of infantry of three battalions, one battalion of artillery of three batteries of four guns, two squadrons of cavalry, and one company of pioneers.

The pay of these troops will be nearly double that of the ordinary troops, being 8 taels per month. The men are to be entirely Manchus, the officers to be chosen wherever the best can be found irrespective of nationality.

The commander of this force will be Price T'ao, a younger brother of the Prince Regent.

Summary. It is practically impossible to make an estimate of any accuracy as to the number of troops under arms in China. The numbers of the Hsun-fang-tui vary very much in the different provinces, as much or more than the qualities of the troops themselves. It may be safely said that in most provinces the number is under rather than over 10,000. The special forces may be neglected. We would then have for the Luchun (first line) 140,000 to 150,000, and for the Hsun-fang-tui (second line) 180,000 to 200,000.

It must be borne in mind, however, that this is not a homogeneous force equipped for taking the field.

Reprints and Translations.

INDEPENDENT DETACHMENTS.*

By Major A. BUDDECKE.

The fewer experiences in actual war an army has, the more must it, in its work in time of peace, call on military history for counsel and advice. This is plainly shown in all exercises tending to the education of troop leaders. Mere imagination can never replace reality in the formulation of problems and may create situations which possibly have the appearance of war conditions, but which have nothing in common with them. There is also great danger of falling into ruts leading to one-sidedness. Only when problems are based on recent military events will they become natural and correspond to actual war conditions and thereby form advance preparation for them.

It is a strange coincidence that everyone sketching out problems for larger bodies of troops or map problems gives preference to situations in which a mixed detachment operates independently or only in very loose touch with the main command and therefore appears as an independent detachment. The reason for this may be found in the fact that the situation of a detached body of troops can be confined to more sharply drawn limits than that of a body of troops in close connection with an army and in that it confronts the leader of the detachment with a concise, independent situation. Although such a manner of

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sketching out situations has large advantages, it is justifiable only so long as it sticks close to reality and does no violence to things by detaching a part of an army which actually would not be detached or supposes the sending out of a detachment which is not justified by the general situation.

It might be of interest and of value to scrutinize military history for cases in which independent detachments have been sent out, what experiences were gained thereby, and of what importance these may be for future wars.

The appearance of independent detachments may be found in all stages of the war. In the beginning of a campaign already the necessity for sending them out may arise through the political situation, or if we are confronted by several opponents, and if we have to reckon with danger coming from different directions. However desirable it was to Prussia in 1866 to keep together all of its forces for the decisive battle with Austria, the position taken by Hanover and the South German States made the sending out of independent detachments absolutely necessary. After the destruction of the Hanoverian army and after the situation had thereby assumed a more favorable aspect, the decision of Prussian General Headquarters to attach the divisions under Generals Beyer, Goeben and Manteuffel to the Mayence Army was of decided importance. The utilization of these combined forces led to the defeat of the South German forces, which, although split up, were double the numbers of the Prussian forces.

Similar was the situation at the opening of the war of 1877-78. Here also the political situation on the side of Turkey, the prior battles with Servia and the uncertainty of conditions in Turkey, had led to a splitting up of forces, which compelled Turkey to operate with detachments against the Russian Army. Although the Turks had in this the advantage of the exterior line and could effectively interfere with the flank of its opponent, who had advanced beyond the Danube, they could prevent the Russian offensive for but a short time, because they could not untilize their *combined* forces. Even the well planned flank attack of Osman Pasha changed into the defensive very

soon and finally ended in defeat, opposed by the continually augmenting and enveloping Russian force. This example shows at the same time that operations of single parts of a force against the flanks of a concentrated army are of little value if not going hand in hand with a forceful frontal attack.

Geographical conditions also, such as the projection of a part of the frontier into hostile terrain, may lead to the necessity of giving the mobilized forces there an independent task. It was just such a condition which enabled the Austrian General Headquarters to take advantage, at the opening of hostilities in 1866, of the isolated position of the 1st Austrian Corps and of the Saxon forces. Had it been the desire of the Austrian Commander-in-chief to attack with his main forces the 1st Prussian Army defiling from the mountains, then the 1st Austrian Corps, in conjunction with the Saxon forces, would have received the task to oppose the 2d Prussian Army and the Army of the Elbe so long on the Iser sector, until a decision had been arrived at with the 1st Prussian Army; but in case the Austrian Commander-in-chief desired to send only detachments against the 1st Prussian Army, and to throw all of his forces against the other two armies, the 1st Austrian Corps and the Saxon Army would have had to contain the opponent until the arrival of the main body of the Austrian Army. The erroneous views of the Austrian Commander-in-chief and his uncertain orders concerning the tasks of the detached corps, however, led only to the fact that that corps, after a short resistance on the Iser, abandoned this strong sector and the road to Gitschin to the enemy. This situation clearly illustrates how much depends in such detachments on the task set and how necessary it is to clear up all doubts on the part of the detachment commander concerning our own intention.

Especially difficult is the situation of detached bodies of troops when the General Headquarters is forced, like in the Russo-Japanese War, to designate a point far in rear of the concentration of the army. The sending ahead of a single part of the army is then justifiable only when the question is to gain a definite object, possibly a strong point of support, or an important line of communication, or when the object is to prevent a debarkation. Duties of a general nature, as, for instance, to gain touch with the enemy, reconnaissance or interruption of the hostile advance, should always be left to the cavalry. Accordingly, the sending, on the part of the Russians, of strong detachments to Liaotung and into the Ussuri country for the protection of Port Arthur and Vladivostok as necessary points of support to the fleet was entirely correct; but the detaching of the East detachment under General Sassulitsch towards the Yalu was a strategical error. The instructions given General Sassulitsch were impossible of execution on their face—to prepare obstruction to the Japanese advance first on the Yalu and thereafter in the Tschanboschan mountains and to avoid a serious engagement. Such instructions condemn the leader in the start to the undesirable role of inviting defeat, even if he sees a possibility of success. And even then when the leader, suppressing all desires for honor, does his best to act in obedience to his instructions, it will be difficult for him in any case to form a correct judgment when a battle should be accepted and when broken off. The definition between a containing and a decisive battle is difficult to arrive at and the boundary between the two easily overstepped, even against the will of the commander. Consequently General Sassulitsch should be blamed less for the heavy defeat on the Yalu than the Russian General Headquarters, which latter placed this corps in a position 200 km. in front of the main army and subjected it to the attack of superior Japanese forces. Such a manner of utilizing advanced corps we might designate as strategical advanced positions, which are as little useful as the now obsolete tactical advanced positions.

And even under otherwise normal conditions, the entire operations can be influenced by the operations of separate detachments as when one part undertakes to forcibly break through the line of frontier guard, to gain an insight into conditions with the enemy, to interfere with its mobilization and advance, or to secure to itself some local advantage. Such enterprises, on which war games are based occasionally, are full of dangers,

especially if we have no start over the enemy in readiness for operation so as to enable us to maintain possible advantages gained, or to utilize them. And they may become absolutely fatal if they are undertaken as a way out of a dilemma, for instance, to satisfy public clamor. In this respect the opening acts of the campaign of 1870-71 on the side of the French furnish warning examples. Frossard could not do much against the Detachment of Pestel, but ran into the danger at Spichern of being annihilated by the advancing corps of the 1st and 2d German Armies. The advance of the Division of Abel Douay at Weissenberg for the purpose of observation was also a grave error.

In general, the use of independent bodies of troops in front of the army in this stage of the war has never been justified. The duty of reconnaissance and observation had best be left to the cavalry division, and that of guarding the frontier to smaller mixed detachments. In this respect the detachments under Pestel and v. Seubert in 1870 and those under Count Stollberg and v. Knobelsdorf in 1866 performed excellent service, and not only kept the enemy at a distance, but also deceived him concerning the movements of their own army.

At the beginning of operations we had best limit the detaching of independent bodies to what is absolutely necessary, as every detachment sent out weakens the main force and may give the opponent an opportunity to gain a partial success.

In this respect the Russian manner of conducting operations in the war of 1904 furnishes an example to be avoided. Though threatening Port Arthur, the Japanese seduced the Russian Commander-in-chief to abandon his original plan (to first concentrate his army at a distance from his opponent and then to attack him in superior numbers), and march with all of his available forces in a southwesterly direction to Port Arthur. In this movement it was intended that the corps under General Stackelberg, which had been sent on in advance, should form the advance guard. The duty which should have been set this corps ought to have been to execute an energetic offensive movement, the success of which should have been fully utilized by

the main body. Only in this manner could the Russians, in conjunction with the troops there, hope to gain any success over the Japanese and to prevent the investment of Port Arthur. In place of this General Stackelberg received a duty, more in the nature of a demonstration, as follows: "The corps under your command is charged, by advancing toward Port Arthur, to draw as many forces of the enemy as possible to itself and to thereby weaken the enemy's force now operating in the Kwantung Peninsula. Consequently your advance on the security troops in the North has to be made quickly and energetically, in order that these, assuming that they are but weak, may be defeated as soon as possible. In case you encounter superior forces, you should not carry on a battle to a decision and your reserves should not be drawn into any battle so long as conditions are not completely clear." It is not to be wondered at that with such indefinite orders General Stackelberg, when meeting equally strong forces of Oku's army, did not dare to act energetically and allowed the opportunity for a decisive victory, which might have turned the scale in favor of the Russians, to slip by. And consequently the "adventure," as Stackelberg's chief-of-staff dubbed it, shared the fate of all such undertakings, *i. e.*, the detached corps is defeated and thrown back on its main army with heavy casualties. And this caused the Russian Commander-in-chief not only to abandon his offensive intentions, but also to lead his army back into its former position at Liaoyang. On the other hand, this first success inspired the opponent to a general offensive which gave him a permanent advantage over the Russians. The single advantage which that advance toward Port Arthur carried in its wake was a short delay in completing the investment of that fortress. This example at the same time illustrates the dangers attending a strategical advance guard.

The case is quite different when at the opening of operation the military situation shows an opponent's weaknesses, which may be utilized, and when the possibility exists of taking possession of some point of importance to the course of the campaign, such as a sector of a stream or a mountain pass. In that case the advance of a separate part of an enemy may be of the ut-

most importance. Such a duty was successfully carried out at the opening of the Russo-Turkish war in 1877 by General Gurko, when he was sent, after the Russians had crossed the Danube, with a mixed detachment of some 12,000 men to the Balkans to take possession of the Shipka Pass, of so much importance to the army for the intended offensive movement on Constantinople. Gurko's unexpected and sudden advance, utilizing to the fullest extent the unpreparedness of the Turks, not only succeeded in taking that mountain pass, but also a considerable stretch of country beyond it towards the South, and would have brought the Russians in a very short time to the objective of their operations if the main army had followed on the heels of this advance guard. But the available forces were not sent to follow Gurko and the latter's success was partly lost. But in spite of this, the undertaking had a great influence on the final outcome of the war and furnishes us a special typical model for the guidance of troops sent out on a similar mission.

A partition of forces, leading to the detaching of single corps, might also be justifiable when the proximity of the enemy requires the crossing of a considerable obstacle, such as a stream, a mountain ridge, part of a delta, a piece of swamp land, or a line of forts. The successful crossing of an obstacle and the necessity of appearing on the other side of it with strong forces may lead to an advance on a broad front in several columns. In such a case we should remember that one column opens the road for another and that there is a possibility for successfully deceiving the opponent as to the actual place where the main force intends to cross. The greater the enemy's degree of readiness, the more hazardous and difficult will such an undertaking be. In this respect the Prussian entry into Bohemia in 1866 will remain a model for all times to come. And the deployment of the 2d Prussian Army from the mountains shows specially how much the separated columns have to endeavor, in such a situation, to give the impression that they are alone, and how much the success or failure of the one column influences the fate of the other.

Such an advance may also lead the enemy to send out detachments, should he not have all of his forces in readiness, or should he intend to utilize them in some other direction. Such was the case in the above instance with the Austrian Commander-in-chief. With the intention of effecting the concentration of his army at Josephstadt and thereafter advance on the army of Prince Frederick Charles, Benedek sent the 6th and 10th Army Corps to Nachod and Trautenau with instructions to "advance with full energy" on the columns of the 2d Prussian Army defiling from the mountains. The course of this operation shows, however, that strong detachments are inadvisable in such a situation. The victory of the 10th Austrian Corps over the 1st Prussian Corps at Trautenau was more than offset by the defeat of the 6th Austrian Corps at Nachod and of the 8th Austrian Corps at Skalitz. In such a situation the defender would have more chance of success if he kept his forces together in order to defeat with them parts of the enemy's army coming separately out of the mountains. Of course we should so act in this that the opponent can gain no advantage from possession of the exterior line. This is illustrated by the crossing of the Balkans by the Russians in 1877-78. The concentrated Turkish Army awaited on the south side of the mountains the separately advancing columns under Skobeleff and Mirski. But the Turks did not succeed in defeating the Russian columns before they joined. The result rather was that the Turkish force, although superior to each one of the Russian columns, was held by one column, while the other enveloped it and finally forced it to surrender on an open field.

Crossing a river in face of an enemy will in most cases necessitate sending out detachments, for the purpose of demonstration. The Russians, in crossing the Danube in 1877, to screen their main crossing which was intended to take place west of the quadrangle of fortresses held by the Turks, sent the 14th Army Corps to cross east of the quadrangle and occupy the Dobrudscha, from where General v. Zimmerman was to prevent Turkish operations against the Russian lines of communications to the rear and to draw the attention of the Turks to himself by offensive movements. This detachment, reënforced

by another division, succeeded completely in its object. But it had the disadvantage that this army corps and a half remained inactive there during the campaign and was lost to the Commander-in-chief for the main operation, and consequently this latter was not carried through with the desired celerity. In this case the separation of the Turkish forces was of advantage to the Russians.

In the Austro-Italian campaign of 1866 the alert opponent prevented the enemy from crossing the Po. In the latter instance also one corps under General Cialdini was sent to the lower Po to deceive the enemy as to the true measures to be taken. But the project failed and led to the great disadvantage that this force, consisting of five divisions, was disabled and could take no part in the decisive battle.

The opening of operations in the campaign of 1864 shows a successful forcing of a considerable frontal obstacle. The advance of the allies against the Danish works and the Schlei line was made in several separate columns. The corps under Prince Frederick Charles operated entirely independently, and by crossing the Schlei caused the Danes to abandon their fortified position without battle Later in that campaign the Allied General Headquarters endeavored to gain success through sending out detachments, and decided, on the advice of General v. Moltke, to send one corps across to Alsen to support the attack on the Duppler Schanzen (trenches) and to assist in the preparation for the complete annihilation of the Danish forces.

Separate objective points also may lead to a division of the force, as is shown by events in the Armenian theater of war in 1877-78. Here the Russians operated in four columns of about 25,000 men each against Batum, Ardagan, Kars and Bajaset. But they were unable to decisively operate at any one point, while a single combined offensive against the Turkish field army would have promised an absolute success, which would have carried in its wake the gaining of secondary objects.

The marches to the main decision will be, for the purpose of readiness for battle, as a rule, in the future carried out with full utilization of the network of roads and in the closest formation possible. This course is especially advisable when we have no exact information concerning the whereabouts of the enemy. Then we will at least have the assurance of appearing at some point with superior forces Napoleon is indebted to his adherence to this maxim for his success (Jena). When he did not act in accordance with this rule, as in the winter campaign of 1806-7 at Putulsk and Eylau, his attack did not have the desired annihilating effect.

A departure from this rule may be made necessary, however, by difficult terrain. The corps of the 2d Prussian Army, in 1870-71, during their advance on Orleans and later on Le Mans, were kept apart by the conformity of the terrain, amounting to a complete partition, and the consequence was a series of fractional battles instead of one decisive one. This situation in war consequently furnishes a number of examples of independent action on the part of subordinate commanders.

During the march of separated parts of an army from different directions the insertion of connecting units is to be recommended as was done by the Japanese in their advance on Liaoyang; to connect the first and second armies an independent command consisting of one-half of the Guard division and the 10th division was put between the two armies.

Protection of the flanks against hostile forces or against fortified places may also lead to sending out detachments which have to keep on the defensive or offensive according to the situation. But the smaller the forces thus detached the more favorable will conditions be for the main army. The conduct of the Japanese in 1904 furnishes an example worthy of imitation. After taking the Nanschan position they left but one division operating against Port Arthur and left with all the remainder of the force for the decisive battle. They were justified in such a hazardous undertaking, as they could reasonably hope to continue the investment of Port Arthur from the land side in the strong position until the troops designated for the investment could arrive. A similar task fell to the lot of the Badenese division in 1870, which was left behind by the 3d Army when it advanced toward the upper Moselle, for the protection against

Strassberg and the French forces appearing at that time in upper Alsace.

The Italian General Headquarters fell into that serious error of detaching too strong a force in 1866 when it crossed the Mincio for the decisive battle and left 3½ divisions in front of the but weakly garrisoned fortresses of Mantua and Peschiera. The absence of this force was felt most bitterly in the battle of Custozza.

But very seldom will detachments be sent out from the vicinity of the *decisive battleground*, as both opponents will act on the principle that we cannot be too strong in seeking the main decision.

That very much desired "enveloping" the opponent, which often decided the battle, has almost invariably been the result of an advance on a broad front by overlapping the enemy, or by bringing up the reserves, as is illustrated by the German deployment at Woerth and Sedan. It will be an exception, however, when the defender will, of his own volition, lay himself on the operating table and give the attacker time to consider where to insert the knife. We will have to reckon with a mobile opponent, and, as a rule, we will not have such exhaustive information as to his movements as to be able to count with certainty on enveloping him. On August 18, 1870, the German General Headquarters could issue orders for the enveloping movement only after information had been received, in the course of the day, as to the position of the hostile right wing and could execute the enveloping movement only by bringing up the last reserves. In such a case it may happen that we are wrong in our estimate as to where the hostile wing really is and that the troops designated to execute the envelopment will encounter a hostile front, as did the 9th Army Corps at Amanweiler and the 16th Infantry Division at the Hallue. In the latter case General v. Manteuffel was thrown from his intended offensive to the defensive and was enabled to break the enemy's power only through a stubborn resistance.

As a matter of fact we find but few cases in later military history where, as at Bautzen, detached parts of an army brought

about a decision in the main battle through flanking movements. In 1870 even the German beloved "marching to the sounds of cannon," to which we are indebted for a part of our successes, leads only in rare cases to an actual envelopment. At Spichern the far-reaching enveloping movement of the 14th Division via Volklingen and Rossel on Forbach did not have the expected success, for it came too late and was not carried out with the necessary energy. Only too easily are leaders of such movements intimidated and held back by a decided opposition of even weaker detachments, especially if they are not sufficiently informed as to the status of the main battle. An exception to this is the conduct of General v. Lestoq, at Eylau, who sent but a detachment against the advancing Ney and took part in the main batle with his main forces.

Only an exceptional situation, like the one leading to the battle of Vionville, shows one of the very few military historical examples where the battle is influenced by the successive arrival of detached parts of the army. But here also it is apparent that the leaders of the detached bodies, knowing themselves to be weak, were more inclined to seek connection with the troops already engaged in battle than to operate independently against the opponent's flank.

Detaching a part of an army when a decisive battle is expected is always dangerous, as is illustrated by the defeat of the corps under Mortier at Austerlitz in 1805, and especially so is the sending a part of the army to the front for the purpose of a reconnaissance in force. By doing this latter the Austrians sustained a partial defeat at Montebello in 1859, and this reconnaissance did not at all clear up the situation.

In war it will but seldom happen that a secondary battle of detachments takes place on the periphery of the main battle, as is frequently the custom in peace maneuvers, where one part intends to interfere in the main battle and another part prevents it therefrom. An exception to this rule, and at the same time a reproach for such a situation, is illustrated by the operations of the corps under Tumpling and the Vinoy during the decisive battle at Sedan. A French army corps was sent from

Paris to protect the connection and lines of communications to the rear and to eventually take part in the decisive battle: a German army corps and two cavalry divisions had been sent out with instructions to furnish security against Paris, to threaten the hostile connections, and to prevent hostile forces from gaining the rear of the German army or to get to Paris. The results plainly show how difficult the situation of such independent corps is and how little we should expect from them. While General Vinoy, whose orders were not definite enough and who was not sufficiently informed as to MacMahon's situation and intentions, was unable to make connection with the main army and could not prevent, even though he occupied a stretch of the Maas, the crossing of parts of the German army between Sedan and Mezieres, and thereby prevent the complete surrounding of the French army, the Sixth German army corps, reënforced by the Fifth and Sixth Cavalry divisions, allowed the opportunity to slip of preventing the retreat of the weaker forces of Vinoy and to prepare them a Sedan on a smaller scale. There was an absence of decisive action on both sides, another proof that the leader of an independent detachment being in the uncertainty, which as a rule surrounds the entire sphere of a decisive battle, is apprehensive as to his own fate, and does not always dare to come to a bold, independent decision.

The pursuit after the decision has fallen cannot be taken up with the combined forces if the retreating hostile forces separate in different directions, or when our own army has suffered heavily and needs rest before continuing operations. In that case sending out detachments is correct, and these detachments will gain their object the sooner, the heavier the defeat of the hostile army has been. Napoleon's pursuit after Jena illustrates this clearly. The general stuation after Orleans also caused the German General Headquarters to send the army corps in diverging directions; to the upper Loire, to the Sologne and towards Tours, while after taking Le Mans it confined itself to the sending out of pursuing detachments (v. Schmidt and Behmann). The commanders of such detachments have a difficult task and have to combine audacity with prudence in

order to damage the enemy as much as possible without themselves running danger of disaster. How many dangers are run by pursuing detachments, if the hostile army has not been thoroughly beaten, is illustrated by the fate of the corps under Vandamme at Kulm. It was Napoleon's original intention after the battle of Dresden to follow the main army of the allies across the mountains into Bohemia, but when he received information of the defeat of Oudinot and MacDonald he drew back all of his forces to Dresden, and in doing so left the corps under Vandamme to its fate—annihilation.

After the opening battle of a campaign, during a further advance into the enemy's territory, the necessity of detaching bodies of troops may often arise independent of detaching pursuing detachments. The advancing victor must take proper measures to protect his flanks and communications to the rear against new formations of the enemy, dispersed detachments, and turbulent inhabitants. He will have to take smaller fortified places out of hand, and will have to send detachments against larger fortifications for observation and investment (as the First Prussian army corps at Olmutz in 1866), and will have to protect the investing troops by sending out detachments to prevent hostile relief operations.

The numerous duties involved in this are aptly illustrated in the second phase of the campaign of 1870-71 by a number of examples, the most prominent of which is the sending out of the corps under Generals Von Werder and Von der Tann. The advance of the German armies to Western France and the protection of their communications to the rear, as well as the protection of the force investing Metz against the newly forming organizations in Southeastern France, absolutely required the detaching of the 14th Army Corps under General v. Werder. His operations show a number of consecutive duties which may fall to the lot of an independent corps in such a situation. His first duty, after the fall of Strassberg, was to advance toward the upper Seine to prevent concentration of troops in the Department of the Vosges, Haute Marne and Aube, to disarm the inhabitants, to reconstruct the Blainville-Epinal-Chaumont rail-

road, to attempt an offensive movement against Langres and to furnish security against Belfort. In carrying out his task and to facilitate his deployment from the passes of the Vosges, General v. Werder had to fight with the advance troops of the Army of the Vosges, then organizing under General Cambriels. During his march to the upper Seine he received instructions to try conclusions with the hostile troops then organizing at Besancon, the strength of which German General Headquarters greatly underestimated, and thereafter to march via Dijon on Bourges. After the fall of Metz and after the Second Army had marched to the Loire his orders were changed again and directed him, after the 1st and 4th reserve divisions had been attached to his command, to invest Schlettstadt, Neubreisach and Belfort to protect the left flank of the II Army and to hold inactive the hostile forces opposed to him on the upper Saone. Shortly after that he received orders to proceed offensively against the last named forces, which in the meantime had been increased to three times their original strngth. In consequence of these divers orders General v. Werder conducted an "energetic mobile campaign" by sending out detachments from his position at Dijon into different direction (Langras Nuits). Only by the appearance of Bourbaki's army was General v. Werder thrown on the defensive and forced to confine himself to the protection of the force investing Belfort by holding the Lisaine line. His detachment has the appearance of a large raiding force, the activity of which shows how much ar independent army corps can accomplish when it acts on the maxim "celerity doubles the battalion."

To secure the troops investing Paris against the newly formed parts of the French Army on the Loire in the North of France, it was necessary to send out the corps under Manteuffel and Von der Tann, which also sought to perform their tasks by offensive movements. General Von der Tann's proceedings, like Von Werder's, showed a varied course. After gaining successes in the start (at Artenay) the uncertainty of the situation forced him to break off the pursuit of the enemy and to take up a position in observation at Orleans, until his retreat was made necessary by the ever-increasing hostile forces, and this retreat General Von der Tann had to fight for at Coulmiers.

After the II Army reached the Loire, this Army Corps and the 13th Infantry Division were inserted between it and Werde's corps, and thereby a continuous protection to the south was formed for the force investing Paris. As nothing much was known concerning the enemy's situation, and as it consequently was doubtful whether these forces would be needed on the Loire or on the central Saone, each message received changed the duty and gave rise to a continuous shifting of the detached corps.

Numerous operations to take smaller fortified places interfering with the advance or with the lines of communications were undertaken in this phase of the campaign. The independent action carried on by the different detachments were, as a general rule, unsuccessful in the campaign of 1870-71. The introductory operations against Diedenhofen, Toul, Verdun and Montmedy, in spite of the large amount of ammunition expended, were resultless and only the operation against Rocroy was successful. It is true, of course, that at that time there was no heavy artillery with the field army. How valuable heavy caliber artillery is, is illustrated in the Austro-Italian campaign of 1866, by the success of General Nunziante, who was sent, when the Italian army crossed the Po, with one division and 74 guns, half of them heavy caliber, against the fortress of Borgoforte, which he took after a short bombardment.

An army defeated in a decisive battle and retreating over a considerable terrain, may be forced to send out detachments corresponding to rear guards or flank guards, to contain the pursuing enemy or to deceive him concerning the true lines of retreat. In that manner General Benedek, during his retreat to the Danube, sent out a mixed corps under General Von Rothkirch toward Tobitschau, to cover there the march of the main column to Prerau. Through the advance of the left wing of the II Prussian Army on this position, ensued the battle of Tobitschau, the result of which had a material influence on the

decision of the Austrian commander-in-chief because it caused him to debouch from the direct road to Vienna and march through the Carpathian mountains into the Waag valley. This frustrated the desired junction of Benedek's army with that of the Archduke Albrecht at Vienna and left the Prussian General Headquarters a free hand against the latter. And to still further delay the junction of these two armies, the Prussian General Headquarters sent the IV Army Corps via Blumenau with orders to take Pressburg and cut the line of communications of the two armies; while the Austrians sent one corps to Pressburg to protect the important point and also to occupy Blumenau. The armistice made an end of the battle of these two detachments just about the time the decision was expected.

When operations are at a temporary standstill, detachments are frequently sent out, as was the case on the Loire after the decisive battles at Orleans and after the pursuit had been abandoned. The corps, which was sent forward, by the II German army, concentrated at Orleans, for protection and for observations of the upper Loire; also those sent towards the Sologne, toward Tours and to the Loire, may well be designated as strategical outposts. Between these and the mobile columns, which for instance General Chanzy sent out for the same purpose, ensued a series of battles, in which the leaders had full opportunity to act independently. Especially instructive are the actions of the Detachment Rantzau at Gien and Briare, and those of the 20th Infantry Division (Kraatz-Koschlau) at Vendome.

Considering all of the above illustrations of later military history, we may truly say that detachments have certainly been sent out in all phases of operations, but that they, being incorrectly employed, have been disadvantageously employed. If the sending out of detachments in the past has proved to be correct in only exceptional cases, there will in future, in European theaters of war, be even less opportunity for their utilization.

The characteristic fingermarks of future events in war will be the massing of troops in a limited field, which will happen not only in decisive battles, but already on the march, because

of the limited room, and considerations of combined utilization require this. The saying "march divided, and fight united," could be applicable only as long as armies were smaller and more mobile and had sufficient room to operate in. In the future the march to the front of an army will show a picture of a single, an almost continuous wave, rolling on to the enemy. The decision will be attained in a giant battle, especially a frontal one, and will be composed of a series of partial successes, in which the insertion of forces on and behind the battle front will play a great role, as is plainly seen in the decisive battles in the Russo-Japanese war at Liaoyang and Mukden. Considering the great distances, the timely arrival at the decisive point of detached parts of an army cannot be reckoned on with certainty, even if in highly cultivated countries the net of railroads offsets in some manner the difficulty of moving large armies. To this we may add, that nowadays the composition of the cavalry divisions is such that they can replace in many cases the mixed detachments and will be able to keep hostile detachments from the field where the decisive battle takes place. But minor successes, which in times past were able to turn the scale in the war situation, will in future be unimportant as compared with the main decision.

With the continued growth of modern armies the possibility of sending out detachments and the purpose of independent bodies will be limited. The subordinate commanders will in most cases operate under the orders of superior authority and but seldom find opportunity for independent action.

EMPLOYMENT OF CAVALRY.

"WHAT LESSONS REGARDING THE EMPLOYMENT OF THE CAVALRY MAY BE DEDUCED FROM THE RUSSO-JAPANESE WAR?"

(By COUNT FRANZ ZEDTWITZ, Captain Austrian General Staff.*)

(Prize article in a competition instituted by the *Cavalry Journal*, Vienna, 1907.)

The technical progress of the last decade has given the infantry a long-range firearm capable of delivering a great volume of fire at many hundred paces, and, owing to the use of smokeless powder, with vastly diminished possibilities of detection.

In the same degrees the effectiveness of the artillery weapon and fire has increased by leaps and bounds; so that the end of the century sees these two arms of the service advancing, in imposing power and completeness of equipment, to the solution of their problem—the extermination of the enemy.

The highly developed technic of these days has been unable to offer to the cavalry an advance, in purely cavalry matters, equivalent to that of the other two arms. The cavalry of today must, in general, employ the same means in the solution of its tasks as it did in the days of the great Frederick. For us the perfection achieved by the highest professional training and the greatest versatility lies between very narrow borders, in comparison with the unsuspected technical marvels that have been absorbed by the other branches.

While the cavalry, busily employed in working out its own advancement, is becoming gradually accustomed to the thought that firearms are essential in the solution of its problems, the chorus of those that see in the rifle, at best, only an auxiliary weapon—or even airily dismiss it as a negligible quantity—will not be silent. And, as the reports of the mighty struggle for mastership in Eastern Asia were received in Europe, they appeared to confirm the contentions of these opponents of the rifle. We read of battles lasting days, even weeks, in which the opposing infantry and artillery were engaged, but of the activity of the cavalry we heard relatively very little

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In view of the little that is at present known concerning the conduct of the Russo-Japanese war, it would be premature to draw positive conclusions regarding affairs and events whose reasons or causes may not become known for many years, or possibly not at all. But owing to the excellent military reports received I believe that we may, even at this early day, deduce several valuable lessons, regarding the employment of cavalry, from the manner in which the opposing cavalry forces in Eastern Asia advanced to the solution of their respective problems.

The purpose of this article is to present these deductions. The article will limit itself to answering the following questions:

1. Are those persons correct who maintain that cavalry, in the future, must play a lesser role than it has heretofore; or will the cavalry of the future be able to meet the requirements made upon it, as it has in the past?

2. Can we deduce from the events of the Russo-Japanese war any lessons for the use of cavalry in future wars?

The functions of cavalry have been and are today, in general, the following:

a. The securing of information (using the term in its widest sense).

b. Strategic reconnaissance.

c. Tactical reconnaissance and security within circumscribed districts

d. The security and screening of our own movements and dispositions.

e. Assistance in deciding a battle.

f. Completing the pursuit of the enemy or retarding the enemy's pursuit.

g. Raids, harassing movements and expeditions against the enemy's lines of communications.

In the varying fortunes of the different epochs of this war first one and then the other of these functions was pushed promi-

nently into the foreground; the conduct of modern war demands of the cavalry arm a great versatility for the solving of all its problems.

Naturally the first problem of the cavalry in Eastern Asia consisted in locating and ascertaining the strength of the enemy. But the goal of or the objects of this service of information were quite different in the two armies.

In the beginning of February, 1904, the Russians had but 35 squadrons (sotnias) of cavalry in Eastern Asia, but at the end of April, of the same year, there were about 100 squadrons. These were increased during the course of the campaign to about 210 squadrons. The Japanese, on the other hand, during the entire war had at no time more than 60 squadrons of cavalry in the field.

In passing it may be remarked that one cavalry regiment of three squadrons was assigned to each Japanese division as divisional cavalry.

So, from the beginning, a much greater economy in the use of their cavalry was demanded of the Japanese.

The Russians had moreover a vital interest in the strategic reconnaissance of the Japanese. To them it was of the greatest importance to ascertain the time at which the Japanese should land, their forces, the place, the strength of the landing party and its further movements. All this was absolutely essential in order to enable them to intelligently make their own dispositions.

The Japanese, on the other hand, having left their country with a particular and specific plan of operations, had, as their first object, the crossing of the Yalu river. Detailed knowledge of the Russian situation and dispositions would not have changed this plan at all. Nevertheless, through their excellent spy system, they had a very good general idea of the Russian movements, and, in the initial stage, this was all that was necessary.

In spite of the fact that General Mischtschenko, with his brigade of Trans-Baikal Cossacks, had been stationed in Antung since February and that the landing of Kuroki's army, at the harbors of Chemulpo and Chinampo, continued from the beginning of February to the end of March, the Russian commander-in-chief was not informed of the strength of the Japanese forces that had been landed. The general concentration of Russian forces would indicate an expected attack from the direction of Inkou. Furthermore, when, after the forcing of the Yalu (May 1, 1904), General Sassulitch was compelled to retreat, he was reinforced with a vacillating, undeterminate hesitancy that argued a lack of knowledge of the Japanese movements on the part of the Russian commander. One cannot avoid gaining the impression that Kuropatkin considered Kuroki's army as only a weak force landed for the purpose of making a demonstration.

How could this happen? Why should Mischtschenko and his brave troops, who later evidenced such daring and enterprise, fail so miserably in securing information at the beginning of hostilities?

With no desire to be captious or fault-finding it is impossible to escape the conclusion that the instructions for the strategic reconnaissance did not prescribe the objects to be aimed at in the reconnaissance with sufficient clearness. If the Japanese had been constantly observed during their landing, and if Mischtschenko's Cossacks had sent back full information regarding all possible landing places and the occurrences thereat, the mental picture formed by Kuropatkin would certainly have been much nearer the truth.

At this time, as well as later, particularly during the period between the battle of the Sha river and the battle of Mukden, there is evident, on the Russian side, a very palpable lack of centralization and direction in the entire work of information and reconnaissance.

Before going further it may be stated here that much of the difficulty experienced in securing reliable information is due to the lack of proper training in time of peace. I will return to this point later.

The service of information must be directed by a central authority, the districts of operations must be clearly assigned and the objects to be attained must be perfectly understood.

Otherwise the best of cavalry will be frittered away in objectless employments and will not serve its purpose.

Far more interesting, however, than the emphasizing of this well-known truth is the consideration of some rather remarkable occurrences in the work of reconnaissance.

On March 28, 1904, when Kuroki's army reached Anju and his advance guard had already crossed the Velim (Chongchyen or Chengchangang) river in its advance on Wiju, the first encounter of the war occurred between several squadrons of Mischtschenko's forces and Kuroki's advance cavalry. What happened? Both opponents designedly avoided the attack and contented themselves with a long-range small-arms duel until finally the arrival of Japanese infantry compelled the Russians to retreat.

The manner of conducting this preliminary skirmish is duplicated in countless cases throughout this entire campaign. While in the later periods of the war the work of reconnaissance was conducted, on both sides, with vigor and pertinacity, the action almost invariably resulted in both parties resorting to the carbine.

Is this resort to dismounted fire action an unusual circumstance brought about by the character of the opposing cavalry, their methods of warfare and the nature of the East Asiatic terrain, or is it one with which we ourselves must reckon in the future?

The Japanese cavalry, as has been previously stated, was decidedly in the minority, indifferently mounted and much more inclined, because of these facts and by virtue of their national characteristics, to fire action. As the Cossacks, on the other hand, rarely encountered a mounted opposing cavalry, they also naturally adopted the same methods and opposed fire action with fire action. As a consequence the notable mounted attacks of this 16-months' campaign can be counted on the fingers of one hand.

Moreover, the entire method of warfare was unfavorable to our ideas of rapid enterprising reconnaissance. The securing and verifying of details regarding a hostile army at rest and

well protected is naturally much more difficult than to secure the same data regarding a hostile army in motion. This campaign was, in fact, a war of positions in which, after a short, deliberate advance, the opponents sought refuge in new positions, which they strengthened as rapidly as possible. Thus a cavalry reconnaissance promised little hope of reward, as of necessity, it must be conducted around the flanks of a watchful army covering a very considerable front. Wherever the cavalry gained contact it encountered infantry in fortified positions, and, to avoid the disgrace of returning without information, it was compelled to resort to fire action in order to cause the opponent to disclose his strength, or at least indicate the character of his force.

To all these circumstances was added the unfavorable nature of the terrain, particularly the mountainous portion east of the Mandarin road, where practically no deviation from the normally miserable lines of travel was possible. In consequence, when cavalry encountered a hostile force, there were but two courses of action—to retreat rapidly, or to cut a way through the opponent and continue the advance.

The methods of scouting, so emphatically prescribed in our regulations, were not employed by either of these two great forces in the Far East. Neither Japanese nor Russians, in their work of observation and reconnaissance, made use, as we do, of the services of capable, individual horsemen who can readily conceal themselves, whose function it is primarily to observe, and who fight only in case of absolute necessity. On the contrary, their reconnoitering forces consisted usually of strong bodies, reinforced by artillery, which, in the pursuit of information, usually resorted to fire action.

Can we imagine similar conditions to prevail in our own army? Certainly. In the first place we can very easily picture ourselves opposed to an enemy in position or to one who conceals his movements and dispositions by a well-placed covering force whose lines can only be penetrated at certain points, and then only with the aid of powerful fire action. And should such reconnaissance, of necessity, take place in a locality which,

through the nature of its terrain, does not admit of deviation from the ordinary lines of communication—such as is found in Karst or along the Italian border—the cavalry will find it necessary, not only to use the carbine, but to employ machine guns and artillery as well, in order to accomplish its objects.

In order, therefore, to achieve satisfactory results in our system of information and reconnaissance it will be necessary, in the circumstances just stated, to work with detachments strong in fire action; detachments that, by virtue of their carbines and machine guns, possess the means for the accomplishment of their purposes.

The addition of artillery to cavalry, heretofore mentioned, has proven itself to be feasible and extremely useful, not only to assist in cavalry engagements, but at other times. Thus, after the crossing of the Yalu by the First Japanese Army, General Mischtschenko used his artillery to good advantage in reconnaissances in force and ascribes the good results obtained by these reconnaissances largely to the presence of the artillery. Later, in the early part of June, as he was retreating to the passes of the mountains before a powerful Japanese force, it was again his artillery which rendered a leisurely retreat possible by constantly forcing the enemy to deploy.

The addition of batteries or larger bodies of artillery to brigades or even smaller forces, active in the service of information or reconnaissance, will do much to aid in and simplify their problem and expedite the obtaining of results. The repelling power of artillery fire will be of immense advantage in covering the retreat of a reconnoitering force.

If we accept the idea that accurate information can frequently be gained only by a determined fire action, and that it will many times be necessary to concentrate a preponderance of fire at a given point in order to penetrate a well-posted covering line, then the value of attaching machine guns to cavalry detachments engaged in the service of information must be admitted. That the Russians keenly appreciated their shortcomings in this respect is proven by the fact that, at the beginning of the war, there were no machine guns at all attached to their

cavalry, while at its close there were 16 machine gun detachments, of from 2 to 6 guns each, serving with cavalry.

A further argument for increasing the firing strength of reconnoitering cavalry by the addition of machine guns is found in the economy that is demanded in the use of cavalry. The number and strength of cavalry detachments is limited by the number of cavalrymen available, and this number will dwindle with remarkable rapidity during the progress of a campaign, for the duties of cavalry are many and exhausting. Mischtschenko's brigade, for instance, was compelled to go into cantonment for fourteen days, as early as August, 1904, in order to allow men and horses to recuperate. Rennenkampf's cavalry division, at the same time, had been reduced to half its former strength. Such examples demand eloquently not only economy in the employment of cavalry, but the increase of cavalry effectiveness by the use of machine guns.

It is not within the province of my article to pursue this subject in greater detail. But I do desire to further emphasize one feature—the lack of unity and continuity, on part of the Russians, in their service of information, particularly during the early stages of the war.

For example, in the first engagement of the war, at Anju on March 28, 1904, when Mischtschenko's Cossacks were compelled to retreat before Kuroki's advance cavalry, the entire Cossack brigade retreated without a halt to the north side of the Yalu, and *without maintaining touch with the enemy*.

Later, General Rennenkampf established his headquarters at Saimachi for the purpose of covering and reconnoitering the country as far south as Fenghuangcheng and west to Kuoyatsun. His force consisted of three battalions, twenty squadrons and fourteen guns. It may be stated that, in general, the behavior of this force was characterized by a series of unimportant offensive movements, which, upon being repulsed, promptly resulted in a total and complete withdrawal to the base of operations—Saimachi.

That persistent, never-ceasing observance of the enemy, that watchfulness, which, once having located the enemy, never

permits him for a moment to escape from view, is not apparent until much later in the campaign—and then not always. What an unfortunate influence this badly controlled and poorly conducted system of information had upon the decisions of the Russian commander-in-chief is sufficiently well known.

Such lack of skill in the proper employment of cavalry may be ascribed to two causes:

1. Insufficient instruction in time of peace.
2. The powerful impression, amounting at times to despondency, produced upon troops by fire-action commenced without skill and continued with misfortune.

It is hardly necessary for me to state that thorough instruction in time of peace, instruction whose sole object is the preparation of troops for performing their proper functions in war, will save an army many bitter lessons when war actually comes. To further emphasize this fact would be a sheer waste of words. Now for the second cause We observe in the various engagements of Rennenkampf's forces, in the vicinity of Saimachi, that reconnoitering parties, sometimes consisting of several squadrons, unprotected by covering detachments, are surprised and fired on by Japanese. This occurs, not once, but many times. As a result of the surprise and consequent confusion and a lack of understanding of the employment of fire action, such parties would find themselves in an extremely tight place, from which they could extricate themselves only by a hurried retreat, which usually terminated at the point from which the movement was initiated.

The circumstances are very different when a cavalry detachment understands how to maintain a fire action. A proper disposition of troops and proper orders will protect the detachment from surprise, enable it to use its firearms to the best advantage, and remove the depressing conviction that cavalry, when opposed to unbroken infantry, possesses but one resource —a rapid retreat.

There are many instances to prove that Russian cavalry, when properly led, is able to maintain a fire action

In view of the fact that any cavalry reconnoitering detachment may be forced into a situation whereby it can secure the information sought only by a resort to the carbine, it is essential that every such commander should possess a proper appreciation and understanding of the manner and method of conducting a fire action. A lack of such knowledge will certainly result in useless bloodshed and in failure in the work of reconnaissance.

In the unusual warfare which characterized this campaign we note that the movements of portions of the army in rear were usually sufficiently screened by a strongly posted front, by inaccessible terrain on the flanks, etc Nevertheless we find two characteristic examples of the use of the cavalry screen—at the Yalu and in front of Wafangou.

Before the crossing of the Yalu by Kuroki's army, the Eastern detachment of the Russian cavalry under command of General Sassulitch, of which Mischtschenko's brigade formed a part, was stationed on the west banks of the Yalu and Ai rivers to the north of Antung. To the south of Antung, and as far as the mouth of the Yalu, two regiments of Mischtschenko's Cossacks so thoroughly covered the country that not a single Japanese patrol—according to their own reports —was able to penetrate their territory. I have no desire to discuss, at this time, the question as to whether or not the force was employed in accordance with the requirements of the situation, but merely to point this out as an instance of a skillfully planned and well-conducted screen; a screen with one flank resting on an obstacle.

Whether the Russian cavalry might not have been better employed in an intense, active reconnaissance of the Japanese army during the ten-day march of the latter from Anju to Wiju and again during their ten-day stay at Wiju is another matter.

To be sure, a screen when aided by only a small obstacle, such as is furnished by the Yalu below the mouth of the Ai river, and when consisting of a numerically inferior force, can hardly hope to be invulnerable. But even though scouts or reconnoitering parties coming from the enemy should find it

possible to penetrate the line without detection, a proper vigilance will prevent their return.

That the maintenance of a successful screen, without the aid of some important natural obstacle, is an extremely difficult matter is amply proven by the measures adopted at Wafangou, where the number of Russian troops thus employed was excessively great and no results were obtained. In the latter part of May the Japanese Second Army (General Oku) had been maneuvered to a point north of Kinchou with the intention of proceeding against General Stachelberg's corps. For the purpose of reconnaissance and in order to screen their own movements, the Japanese, already weak in cavalry, had detached Genral Akijama's cavalry brigade, consisting of 8 squadrons and 2 machine gun detachments (to which had been added 2 battalions), with orders to push northward. On the Russian side General Samsonoff, with 13 squadrons, ½ company Frontier Guards and 1 battery, had been ordered to proceed toward Wafangou for the same purpose. These dispositions resulted in the engagement at Sungchiatun (south of Wafangou) on May 30. In the effort to screen its own army Samsonoff's force, during the early part of June, was being constantly increased. Stachelberg's corps originally consisted of 35½ battalions, 19 squadrons and 11 batteries. On the 10th of June 6 battalions, 16 squadrons and 2 batteries were in the screen and scattered along a front 30 kilometers in length, with headquarters at Wafangtien. And despite the fact that all avenues of approach were closely guarded by this force, the Japanese succeeded, by massing a local superiority of troops in breaking through the screen wherever they wished and securing information. In these reconnoitering engagements, which frequently assumed the nature of a surprise, the carbine naturally played an important part.

The advance of Oku's army, on June 13, led, as is known, to the battle of Wafangou (Telissu).

Two Japanese divisions stood opposed to the front of the Russian position at Wafangou. This Russian front was about 7 to 8 kilometers in length and facing south, in a general direction. One Japanese division was far to the west and Akijama's cavalry brigade had been pushed far to the east. Thus we observe that on the evening of the 14th there were two Japanese divisions in the immediate front of the enemy, and two strong forces, one on the right and one on the left, each distant about two miles, and each prepared, in the event of insufficient reconnaissance on part of the enemy, to fall with tremendous effect upon the enemy's flank at any time during the battle.

Without going further into the interesting details of this battle, I will state that the employment of the Japanese cavalry brigade as a fighting force in this action cannot be too highly commended, as it is typical of the manner in which large bodies of cavalry will be utilized in the engagements of future wars.

With the increasing perfection of firearms the vulnerability of the flanks and rear of a position has correspondingly increased. If either flanks or rear are menaced and the enemy cannot be met with an equivalent volume of fire the fate of those thus threatened is usually decided. At the battle of the Yalu the most courageous frontal combat was paralyzed, on the Russian left wing, when weak Japanese flanking detachments were observed making their way around the Russian left. At Kinchou the Russian troops had defended their position at Nanshan with the utmost obstinacy until they saw that the Japanese had surrounded their left so far as to practically turn the position. Everywhere—at Wafangou, at Mukden—we see the same maneuvers produce the same results; an arduous, destructive, often unsuccessful, frontal fight changed to a favorable issue by threatening the enemy's flank. The success attending these flank movements will be in proportion to the degree of surprise that attends their execution. When the enemy's surprise is complete no counter measures can be adopted.

Cavalry, in large bodies, appears to have been predestined for just such movements as these. In battles of the future cavalry will be employed in large masses, in divisions, liberally assisted by machine guns and horse artillery. It will be commanded by leaders who combine, with cavalry dash and enter-

prise, clear, cool judgment and appreciation of the possibilities of a situation, and that decision of character which will impel them, whether mounted or dismounted, to strike the enemy at decisive points with sacrifice, if necessary, of the entire command. Thus utilized, the cavalry of the future will achieve an importance and a position it has not had since its most glorious days.

Whether the employment of Akijama's cavalry brigade was actually planned in this manner by the Japanese authorities is unknown to the author. But its location and movements at the battle of Wafangou would indicate as much. To be sure the brigade, on account of its numerical weakness and lack of artillery, could not gain a decisive success. It consisted of but 8 squadrons and 2 machine gun detachments, and was compelled to operate in the comparatively inaccessible mountainous region southeast of Wafangou.

When the battle opened, on the morning of June 15th, the brigade marched to the battlefield guided by the thunder of the guns. It arrived about noon, just in time to save the sorely pressed Japanese right wing. The Japanese had reinforced their right with every man that could possibly be spared. One squadron of the divisional cavalry had charged without success, dismounted to fight on foot, and was at the time in an extremely tight place. Suddenly Akijama's brigade appeared and produced a complete change in the situation. The brigade dismounted to fight on foot and immediately attacked, vigorously assisted by its machine guns. Too weak, numerically, to assume a far-reaching offensive, it nevertheless succeeded in holding the Russians to the ground they then occupied. Shortly afterwards the battle was decided by the Russians giving way before the Japanese left flank. In the Russian retreat, following this battle, Akijama's brigade was most energetic in crowding the Russian rear guard, driving it out of position after position.

How different would have been the situation of the Russian left flank if it had been attacked by a large force of cavalry, augmented by artillery, instead of by Akijama's weak brigade.

If large bodies of cavalry can be used offensively, to surprise and attack the enemy in flank or rear, they can be used to equal advantage in and by the defense. When, for instance, a flanking movement, by an attacking force, has progressed too far, before being discovered, for infantry to reach the threatened point in time to repel the attack, cavalry may, by virtue of its superior mobility, be rushed to the point of attack to repulse or at least check or delay him. The conduct of the Russian cavalry at the battle of Wafangou is instructive in this respect—unfortunately in a negative way. The mass of the Russian cavalry—Lieutenant General Simonoff's combined division—had been advanced southward to screen and secure the army. After it had been pushed back it was located on the right flank of the Russian position, at Lungkao. The division had reached this position about 10 a. m. of June 14th, under the following orders: "After passing Tafangshan, to occupy a position west of that point, protect the right flank of the corps and observe all roads and valleys in the district Tafangshan—Nengetun (10 kilometers southwest of Tafangshan)—Wuchiatun (10 kilometers northwest of Tafangshan)." In the event of encountering a superior force the division was to retreat via Lungkao.

During the forenoon of the same day (June 14th) an entire Japanese division (the 4th) marched past the front of this position, a scant 15 kilometers to the south, reached the vicinity of Satchodsi at noon and camped there for the night. But no notification of the presence of this strong force on his right flank reached the Russian corps commander until the morning of the 15th.* The distance from Satchodsi to Lungkao is 14 kilometers, and from Lungkao to Wafangou 6 kilometers—total distance 20 kilometers (about 12½ miles).

Quite in keeping with this is the subsequent conduct of this Russian cavalry division. When the Japanese 4th Division

*The first message was dispatched from Lungkao at 6 a. m. and reached the corps commander at 11 a. m.

attacked the Russian position, during the early morning hours of the 15th, the Russian corps commander naturally expected that the cavalry division would deploy on the heights, north of Lungkao, to oppose the enemy. Not at all. The Russian cavalry retreated without making any resistance worthy of the name.

The failure in the work of reconnaissance manifested here by the Russians, and their subsequent behavior, can readily be ascribed to three causes:

1. When the Russian advance guard retreated, on the 14th, the continuity of their reconnaissance was lost. They absolutely lost touch with the enemy. Thus it was a simple matter for an entire hostile division to march unnoticed and unopposed into the district which they were supposed to guard.

2. It is impossible, at least so far as is now known, to acquit the corps commander of the charge that he did not make clear to his division commander what was expected of the latter. The district assigned to the cavalry commander, for reconnaissance, was so small that the line of march of the Japanese division was beyond its boundaries. If the command from corps headquarters had been, "the cavalry division will protect the right flank of the corps; it will reconnoiter all hostile movements and repel, or at least retard, any possible operations directed against the right flank," it is reasonable to presume that the reconnaissance would have been more extended and that the cavalry division would have taken advantage of the many opportunities offered by the broken terrain to retard, for hours, the advance of the Japanese 4th Division.

3. The narrow construction placed upon what was manifestly his duty by the cavalry commander. Had he possessed a larger conception of the problem before him he would not have yielded such a slavish obedience to the letter of his orders.

It would be unjust not to mention, at this time, that the Russian cavalry has, on other occasions during this campaign, rendered the most conspicuous and gallant service. Rennenkampf, for instance, at the battle of the Sha river, at Mukden, and during the later phases of the campaign, has made his name

and that of his brave Cossacks renowned far beyond the borders of his own country. And the behavior of Mischtschenko's cavalry corps, when the Second Manchurian Army assumed the offensive against Sandepu (January 24th to February 4th, 1905), may be pointed out as a model of an energetic action of a large cavalry force making an unexpected attack against the flank and rear of an enemy. That the attack was unsuccessful was due to causes not connected with the cavalry. I will therefore not discuss them in this article.

The action of the Russian cavalry, on the left flank, at the battle of Mukden, is very similar to its behavior at Wafangou. At the time of the battle of Mukden the Russians controlled about 180 squadrons. Subtracting from this enormous mass a liberal number, for allotment to the various army corps, it would have been entirely practicable to assemble on the left flank—where the terrain was strongly favorable to the use of cavalry—at least 120 squadrons. As a matter of fact Mischtschenko occupied this flank with abour 80 squadrons.

The events that occurred are so well known that it is unnecessary to go into them in detail. Nor do I wish to speak of the entirely insufficient reconnaissance on the right flank. I only desire to point out that Mischtschenko's force—and it represented at least 8000 carbines and 20 batteries—was not utilized to oppose an effective resistance to the surrounding, by the Japanese, of the Russian left flank; and to invite consideration of the results that would have been achieved if the entire mass of available Russian cavalry—120 squadrons (at least 12,000 carbines, a large number of machine guns and about 20 or 30 batteries)—had attacked the exhausted and worn-out army of General Nogi, before it could have made itself felt on the battlefield of Mukden.

While the thought that cavalry will no longer be able to win its battles with the saber alone is a rather sad one to the cavalryman, we are forced to the conclusion, by a consideration of the engagements mentioned, that a decisive victory could, in the majority of cases, only have been achieved by the aid of the carbine. A certain courage is still required to make such an

avowal. The facts, however, cannot be denied. But let no man believe that a resort to the carbine by cavalry will be the death-blow to cavalry dash and enterprise. Quite the contrary. The charge will clear the way to the enemy's most vulnerable point, a point guarded perhaps by hostile cavalry. The charge must not represent the object or end to be attained, but merely the means for attaining the end. And when further advance with the saber is impossible, then, under skillful guidance, with the carbine, fighting the enemy until victory or annihilation results.

Closely connected with the functions of cavalry during a battle are the duties allotted to it in the pursuit of the enemy after a victory or in retarding his pursuit after a defeat. There are numerous examples to illustrate such employment, but their discussion is not within the province of this article.

No statement concerning the employment of cavalry during the late war would be complete without the mention of the valuable service rendered by it in the lesser warfare which was conducted, particularly on part of the Russians, with an enterprise and daring suggestive of the days of Nadasdy, Trenck and Hadik. The war spirit that animated the cavalry is best shown by the unbroken series of brilliant undertakings, during the various cessations of operations, and found its climax in the great raids of Madritoff in Korea and Mischtschenko and others in Manchuria. Such events as these are sufficient to convince the most skeptical observer that cavalry does not necessarily sacrifice dash, spirit and enterprise because it does much of its work with the carbine.

The value of these undertakings must not be underrated. Their total results represent a great material success. But greater than this consideration is the influence exerted by them upon the spirit of their own troops and upon the morale of the enemy.

As examples, I shall select at random, from among a number of such incidents, a few, to show what the Russian cavalry accomplished between the time of the battle of Liaoyang and the battle of the Sha river, that is, in the latter half of September, 1904:

Night of September 17. A Russian detachment bombards the railroad station Yentai with 3 guns.

September 17. Extended and successful reconnaissance by portions of Rennenkampf's and Samsonoff's cavalry divisions.

September 25. A Japanese detachment of 1 battalion and 2 squadrons, having advanced between the Mandarin Road and Tumintsi, is forced to retire by Russian cavalry.

September 26 and 28. Siberian Cossacks capture Japanese trains of beef cattle. Ural Cossacks surprise and attack a Japanese bivouac. Orenburg Cossacks decoy half a squadron of Japanese cavalry into an ambush.

September 28. Engagement between Russian cavalry and a Japanese detachment consisting of 1 company, 2 squadrons and 4 guns.

September 29. At the center of the line, a Japanese outpost of 1 company is dispersed by Russian cavalry; the Russian artillery with this detachment compels the Japanese to vacate the adjoining heights.

September 30. Russian cavalry advances along the right bank of the Hun river as far as Changtan, drives out the Japanese garrison and burns 17 lighters, of which some were loaded with ammunition.

Thus the reports of the operations of the lesser warfare continue. A world of heroism, courage, enterprise and material and moral success is contained in these incidents, thus briefly recounted.

The great raids were conducted on a vastly larger scale, both of men and materials. Thus, in his well-known first raid toward Newchwang-Inkou, Mischtschenko commanded 36 squadrons and 24 guns. In the third of these great raids, in the latter part of February, 1905, 80 squadrons were employed. In his last raid, in May, 1905, Mischtschenko had with him 50 squadrons and 12 guns. The object of this last raid was to secure information as to the Japanese dispositions in front of the Russian right flank. During this expedition one large clothing depot was burned, a detachment of the 7th Division hospital was captured, large sections of the Japanese telegraph were

destroyed and a number of bands of Chunchuses were scattered. The raiding force attacked the Japanese lines of communication and engaged the 49th Japanese Infantry Regiment, whose duty it was to guard their lines from Mukden to Chifutsi. The Cossacks attacked the Japanese, who occupied a fortified position, and, assisted by their artillery, routed them completely. Some Japanese companies were totally destroyed, others captured. During the subsequent progress of the raid a provision column was captured and the Japanese telegraphic communications destroyed in many places along their rear.

This raid resulted in establishing positively the positions of the three field divisions of Nogi's army.

Losses of the Russians—Killed, 2 officers and 34 men; wounded, 9 officers and 140 men.

Losses of the Japanese—About 500 men, among which were 6 officers and 234 men captured.

Captured by the Russians, among other things—2 machine guns, 20 carts, 150 or 200 horses.

And all this was accomplished by the cavalry of an army which for almost a year had been persistently unfortunate in all its battles. It is not surprising that such a series of daring cavalry ventures should produce, as they did, a deep impression upon the Japanese army—and in Tokio as well.

It is hardly necessary to mention that, during the operations of this lesser warfare, the cavalry, time after time, encountered resistance which could not have been overcome by a charge; resistance, to overcome which, the use of the carbine was absolutely essential.

I have endeavored, in this article, to point out, in a general way, the various activities of the cavalry arm, and believe that we may now deduce from the subject matter the answers to the questions propounded at the beginning of my paper.

The cavalry of the future, when properly instructed, organized and employed, will not only be able to maintain its present position among the various arms of the service, but will be of greater assistance before, during and after a battle than heretofore.

Cavalry is indispensable in reconnaissance, despite spies, telegraph, balloons and other sources of information, and more important than ever in screening and securing an army during a campaign. Under competent leaders it will achieve an importance, as a fighting arm, never equaled since the days of Frederick the Great.

It is self-evident that an instrument, in order to respond to such high demands, must have reached the highest point of perfection; and I present herewith the most important practical applications, the most impressive deductions, that can be drawn from the use and employment of the cavalry during the late war:

From a careful, conscientious study of the cavalry engagements of this war and a consideration of certain, constantly recurring phenomena peculiar to each, one is forced to the conclusion that cavalry must not only be able to ride well and charge, but to fight with the carbine equally well.

Beginning with the reconnoitering patrol, which will, of necessity, be forced to have frequent recourse to the carbine, through all phases of modern war, to the unexpected, decisive attack of large, well-organized bodies of cavalry for the purpose of rolling up a hostile flank, we are everywhere confronted with the absolute necessity of having a cavalry that knows how to shoot.

The demands now made upon cavalry as to horsemanship and maneuver ability can certainly not become less; for the solution of the problems which now fall to that arm, in the covering of long distances in difficult terrain, in clever maneuvering in such terrain, and in repulsing a hostile cavalry, require as high a degree of mounted training as has been demanded in the past.

The ruling spirits of this knightly arm must therefore confess, freely and openly, that the former glory of the cavalry can no longer be maintained with the saber alone, but that the carbine will, in future operations, play an equally important part.

Cavalry of today should be trained in the covering of great

distances and in maneuvering in every kind of terrain that is possible for horses; it should be determined to achieve success, without fear of either hostile cavalry or infantry; animated with the unflinching resolve to sacrifice itself to the last man, if the results are sufficiently important to warrant such action; and so instructed and led as to fight equally well mounted or dismounted, giving the preference to that method of fighting which promises the best results. Such is the goal of cavalry. And with such a force our arm will receive a greater esteem and admiration than ever before and will hold within its grasp the means of deciding the fate of battles.

TRANSLATOR'S NOTE.—This article emphasizes the necessity of proper instruction, for cavalry, in the use of the carbine. It is a plea for a better knowledge and a more intelligent conception of the advantages of dismounted fire action. In this respect it teaches us little. Since the days of the Civil War, when dismounted fire action so frequently and effectively established its necessity to the cavalryman, it has and wisely, as is now again demonstrated, never lost its importance in our regulations. It would seem therefore that, in this respect at least, European cavalry is today aspiring to a stage of development which we have already attained.

JUMPING AT THE HORSE SHOW.

From the Spectator.

The best day at the International Horse Show must of necessity be the day on which the King and Queen come with their grandchildren to see the competition for the gold Challenge Cup presented by the King himself. It is open to officers of all nationalities, and each year the competition improves. This year there were six teams entered, of three officers apiece, from the Argentine, Canada, Belgium, France, Italy and England, and, perhaps unexpectedly for those critics who had apparently made up their minds that English officers would not be able to hold their own against officers trained in foreign riding-schools, there was a very close competition, which resulted in the English team being placed third, with the French and Italian teams first and second, and the Canadian, Belgian and Argentine teams coming after the English. It was an English horse, too, which had the best individual record, and an English officer who showed the best riding of the day. "Luxury," the horse, is a chestnut gelding, aged; his round was practically faultless, and he was beautifully ridden by Mr. Malise Graham, of the 16th Lancers.

The jumping in the King's Cup competition was particularly interesting, for it followed a rather curious display of failure by one of the hunter classes. Many of the horses should be as well used to the show ring as the hunting field; but horse after horse failed to make anything of a not very exacting jump over rails. They managed other jumps as high, but nobody got over this jump until one of the judges pointed out that the sun shining through the blinds over the glass roof put a patch of blazing white on one side of the rails, while the other side was in shadow. The rails were moved, and the very next horse cleared them. As they were placed before, they were unlike anything a horse would see in the hunting field, and the horses seemed to decide that it was not worth trying to understand the jump. Once or twice the riders were balked by the spectators; it is odd that people who come to a horse show should forget that a horse can be "put off" as easily as a man. Once, as a horse was being put at the rails,

a lady in a white dress jumped up almost under his nose: the horse, a clever gray, hesitated, had a good look at her, and then went over. But, taken as a whole, the jumping of the hunters in this competition was disappointing; it would not have prepared a casual visitor for the jumping of the afternoon.

In the naval and military tournament you may get something of the thrill that belongs to the lists of the Middle Ages; some of the contests have come down from those days to these. But you come nearest to the real spirit of the tournament, surely, on the day when the officers' teams ride for the King's Cup. There is the extra touch of pageantry in the parade of the officers in their brilliant uniforms; the King and Queen are enthroned in a gallery, there are great doors opening into the arena, the lists are open to soldiers all over the world, the competitors ride in at a call on the horn. The jumps, perhaps, would have been a little too much for Richard I.'s horses; we have taken many years to breed our hunters and chargers into the animals we have today. The jumps were certainly a severe test. They were nine in all, but three were to be jumped twice, and two were almost double jumps. First came a hurdle, brushed up to five feet; then three rails sloped, the top rail four feet six inches; third, railway sleepers on end, four feet six inches; fourth, a wattle fence, four feet six inches; fifth, two field guns placed muzzle to muzzle; sixth, a gate, four feet six inches. Then the first three fences had to be taken again, and then the rider turned and took his horse down the center of the arena, first over four feet of water on to a ramp, and from the ramp over a three-foot wall with a five-foot drop the other side; next, he had to take his horse at a line of dummy soldiers, and after the soldiers to ride up and down a bank and over a fence the other side—the last a very good test of a confident jumper. One of the jumps, the line of soldiers, was a complete failure. Nobody got over it, though one of the French officers succeeded in only knocking off a head and body. The line was of dummy Grenadiers in scarlet, with bearskins, and they came to pieces, if they were touched, at the neck and waist, and then rolled everywhere over the floor, to the great delight of all the children. But it was not serious jumping. The horses simply did not understand what they had to do. The riders tried with whip and spur—sometimes the only time the whip was raised in the round—to get them to rise at the line, but the result was always the same. It was amusing, if it was a little irritating, to watch the way the horses came up to the line. The animal dropped down the five feet over the stone wall, and then suddenly became the live embodiment of a question and a protest. "What is this? A line of soldiers—and yet they are not exactly soldiers? What am I to do? He can't mean me to jump over soldiers? I've never done such a thing. Perhaps he means me to knock them over. Well, here goes," and there they went, all over the floor. Then the obedient creature took his last fence, a real one, and cantered out.

Probably the Italians were expected to win, and, as it was, they were only three points behind the French team, which is a very small margin of difference after three rounds with thirty-six jumps. But the French were doubtless the better team, and one officer in particular, Captain Cariou, instructor of equitation at the Ecole d'Application, Fontainebleau, gave a wonderful exhibition of riding. The pity was, with so good an entry from the Continent, that there was not a team of German cavalry officers in the competition; it would have been interesting to compare the different schools of riding, as well as pleasant to welcome a team from a neighbor. As it was, the differences between the styles of the different nations were sufficiently marked. It would be absurd to speak of some of the riding expected at the Horse Show as circus riding, but there seems to be a tendency to what may be called trick riding, and it was when the horses were called upon for something like trick jumping that the differences in the schools came out. It was just this that made the riding of Mr. Graham on "Luxury" so noticeable. At a horse show one is usually unlucky enough to sit within range of some critic who declares, for all to hear, that none of the competitors can ride at all, and that if he could not ride better than they, he would not show his face in the ring; but even this ubiquitous critic was silent when Mr. Graham was making his round. What the critic notices is certainly not bad riding; if he gave himself a little time for consideration he would remember that these teams are three riders picked out of an army. But in a cramped space, with very short intervals between the jumps, it is difficult for a rider, even with a perfect command of his horse, to give the appear-

ance of really sitting down in his saddle, and some of the foreign schools do not seem to aim at giving that appearance at all. But Mr. Graham's riding was distinct from the foreign schools; he was essentially English. He sat his horse like a hunting man, and, though he went fast at his fences, and as if both he and his horse meant jumping, he always looked as if he had more time than the others between the jumps. If his style of riding can be summed up, he looked, as did the other English officers in the competition, as if he would beat the foreign officers across country. Could an English cavalry officer, so far as mere riding is concerned, be paid a better compliment? It is just the possibility of paying that compliment which makes us a little doubtful as to the value of a rumored innovation on the part of the Army Council as regards jumping competitions. Hitherto our officers have had no special training in what we may call trick-riding; but if the rumor which has been circulated is true, there will be in future special horses selected as performers at horse shows, and there will be officers specially selected to ride them, and to be sent to various competitions during the year to become masters of the art of jumping in the ring. This may possibly be necessary if an English team is to win the King's Challenge Cup, given that the competition for the cup consists partly of trick jumping, for instance, over dummy Grenadiers. But it is of less value as military training. The real test, surely, between teams of officers should be the cross-country test, say from steeple to steeple in the old-fashioned way; at all events, over unknown country with unexpected jumps, and all sorts of going, grass and plow, and hill and flat, in between. That may be an international competition impossible to arrange, and the jumping competition doubtless is far more convenient in many ways. But the steeplechase, or some form of it, is the real test. It is the test which, in this country at all events, officers choose for themselves.

AIRSHIPS IN WAR.*

By V. STOCKHAUSEN, Captain and Adjutant of the Berlin Garrison.

According to our opinion, the following duties will fall to the lot of airships, viz:

1. Reconnaissance;
2. Transportation of persons and supplies;
3. Carrying messages to and from invested fortresses;
4. Firing or dropping explosives;
5. Attacking hostile airships.

In their reconnoitering duties we must make a distinction between tactical and strategical reconnaissance.

There is no doubt but what the airship is far superior to the captive balloon in the matter of tactical reconnaissance. The ability to quickly change its station, to ascend higher than the captive balloon, to seek favorable light for observation, to observe the enemy from the rear and thereby gain information regarding the position of his reserves, his preparations for enveloping movements, the arrival of reinforcements, the position and location of his cavalry divisions, the position of hidden batteries—all these are invaluable advantages. And even if, on account of its size, the airship offers a larger target than the captive balloon, its vertical and horizontal mobility offers an excellent protection against hostile artillery projectiles, which is another advantage it has over the captive balloon.

For the present, however, the captive balloon has the advantage over the airship in being in close communication with the supreme commander. The information officer on duty at headquarters is charged with keeping the balloon detachment informed of all important reports which are received at headquarters. By means of the telephone the contents of all reports received or changes in the intentions or desires of the supreme commander can quickly be communicated to the observation officer, or the latter can inquire in writing or verbally ask for information, and

*Translated from "Militar Wochenblatt," August 17, 1909, by Harry Bell, Master Signal Electrician, Army Service Schools.

his reports are quickly and correctly transmitted. Although we may assume that through wireless telegraphy we will have better communication with headquarters, it will be some time yet before we can count on receiving written reports accompanied by a map or sketch from an airship by that means.

Despite all advantages the airship has over the captive balloon in regard to tactical reconnaissance, we cannot yet do without the latter as an auxiliary means of reconnaissance. The captive balloon will, in spite of adverse criticism, prove its usefulness in actual war. That the Russian captive balloons are said to have performed but little service in the Russo-Japanese War is immaterial; the best Krupp gun in hands of inexperienced men is less valuable than a stone throwing machine of the Middle Ages.

The airship is of the utmost importance in strategical reconnaissance. Its efficiency, however, is dependent on its construction, on wind and weather, on the quality of its material, on proper navigation and efficiency of the observing officer. The least which we ought to expect of it is the reconnaissance of a sector of the terrain such as is usually assigned to a cavalry division; but, as a rule, the balloon may perform better service in that line.

The trials of the airships of all systems conclusively prove, as far as construction and material is concerned, that we are ahead of all other nations. That we will not remain stationary in our experiments is assured by the personality of Count Zeppelin, Majors Parseval, Gross and Sperling on the one hand, and the untiring energy of the officers of our airship battalion on the other. Anyone who has followed the growth of that battalion for the past 25 years can hardly doubt that its zeal and devotion to duty, through which it has in so short a time gained such an enormous importance in our army, will also in future be the guiding star for its officers' corps and men.

Concerning the point mentioned above, "efficiency of the observing officers," we must own to some doubts. For intelligent observation from the captive balloon practice and tactical knowledge very often are not all that is needed; for observation from dirigible airships a thorough tactical education is absolutely necessary, and only that officer who has been with the general staff

for years possesses this requirement. The old general staff officer will have a far different conception of the advance of an army from that of a young lieutenant just detailed for duty with the airship battalion.

The results of reconnaissance of a cavalry division are, as a rule, the sum of individual reports of specially selected officers; should one of them fail, the experienced division commander can still form a true picture of the situation from the reports of the others; he can later on correct the sins of omission, etc. On his ability to correctly place his units, to use them, to supplement them, etc., depends whether or not the cavalry division amounts to anything. Conditions are different with the airship; in larger reconnaissances it is impossible to say in advance what the airship may see. Even if the observation officer receives a general task in outline, he will very soon have to decide of his own accord where he ought to go, what he believes to be his duty to ascertain, when he will halt, when advance. For this a clear, resolute head is required, one which will not confound minor or unimportant with material and important things. An airship officer has a very important duty to fulfill in connection with navigation, which fully occupies his mind; therefore the tactician, and not the navigator, should be charged with responsibility of observation.

It may be the intention to occasionally detail general staff officers to conduct important reconnaissances. To this we must object, and all experienced air navigators will uphold us, that it is not sufficient to have a clear head and be a good observer on terra firma to be able to at once take observations from an airship, for practical experience is essential to gain perfection in this as in everything else. We should not be led astray by so-called practical experiences, which we believe we have gained in a ride in a captive balloon or in a free balloon or dirigible airship. Even if we were well pleased and satisfied with ourselves, a competent and experienced critic would think different. In trial trips in balloons or airships we are very apt to forget that we, as a rule, occupy ourselves with objects which are but two or three kilometers distant and for the rest merely admire the distant view. As a matter of fact, correct observation from an airship commences only at five kilometers distance. The eye must be trained

to accustom itself to the changed form of objects; just consider how different objects appear when viewed horizontally and when viewed from an elevation, as, for instance, from a spire or high building.

If we desire, in war, to receive useful, extensive and correct reports from an airship, we should lose no time in establishing regular courses in observation for the older general staff officers. No matter how desirable it may appear to the commander to himself ascend during a battle for the purpose of personal observation, he should never do so, for in most cases such a procedure would have bad consequences.

To guard against being misunderstood, we will here specially emphasize the fact that the airship can never replace our large bodies of reconnoitering cavalry. Storm, fog, snow, rain and thunderstorms are enemies which human intelligence can defeat or battle with to a certain extent, but man will never become master of the elements. We can be glad that in the new airships we have gained a new organ for the important near and far reconnaissance, but that should not induce us, for the sake of parsimony, to abolish or limit our present efficient reconnoitering organs.

Let us now examine the second point—the transport of persons and stores. We may assume that in future there will not be much change in transportation of persons different from the present method. There will, however, arise cases where the airship will be of great help; for instance, when the question is of carrying single persons across stretches of country which have not as yet been cleared of the enemy, or across streams, deltas, large lakes, etc. But in fortress warfare the airship will be of the most value. In case of an invested fortress it is of the utmost importance to keep up communication with the outside. The arrival of an energetic and well-known personage may infuse the garrison with new life and spirit. If such a personage had arrived in Port Arthur by means of an airship it may well be assumed that that fortress might have held out longer than it did and that the outcome of the battle of Mukden might consequently have been different. The advantage the airship has over the old style balloon in the matter of transporting persons is self-evident. But only in very exceptional cases, I believe, will the airship be

utilized to transport stores—that is, rations and ammunition. To carry rations to an invested fortress is possible theoretically; provided only that the investing army or that the hostile fleet of airships has been placed *hors de combat* or annihilated, for it will take very many trips for an airship to carry sufficient supplies to an exhausted fortress. However, the smuggling into the fortress of medicines, tobacco, fresh vegetables, etc., may be of the utmost importance to the population and to the garrison. For the present it appears improbable that airships will be able to carry artillery ammunition.

The importance of keeping up a good message service from and to an invested fortress is generally known; every new addition to that service should be welcomed.

We will now examine more closely the fourth point—firing or dropping projectiles. I fear that my views may not be acceptable to everybody, but this must not keep me from expressing them. The firing or dropping of explosive shells will undoubtedly play a great role in future wars. The French have long since come to the conviction that great advantages lie herein. After the expiration of the time limit of the article of The Hague Convention prohibiting the throwing of explosives from balloons, the French government declared that it would not renew its ratification of that article. This shows beyond doubt that it has no intention to allow itself to be governed by a false feeling of humanity, but rather intends to utilize all technical means available. We can not see why it should be permissible to employ a submarine or a torpedo boat, the projectiles of which will sink a battleship with thousands of lives on board, and prohibit the firing or dropping of explosive shells from airships or balloons. It is very probable that the main factor in prohibiting the latter was ignorance of the means of protection against it. Is there any difference whether we are killed by a shell fired from a mortar and falling from above on us or by a shell dropped or fired out of an airship? Is it not more humane to end a war quickly—if it can be done—by dropping shells from airships than to sacrifice thousands and thousands of lives on the battlefield, and have thousands die by epidemics in hospitals consequent upon a protraction of war?

I do not coincide with the opinion that we can hit nothing

from above. I also believe that that professional man was wrong when he said to a supporter of dropping projectiles from an airship: "Place a gold piece on the sidewalk and try and spit on it from a second story window; an airship will have the same chance of hitting what it fires at as you will have hitting the gold piece." To show how learned men can err, I will call attention to a statement made by the well known, celebrated Werner v. Siemens to the effect that there were two problems it would be a waste of time to occupy oneself with, namely, perpetual motion and dirigibility of airships. I also cite the following, although not germane to this subject: On my inquiry where I could attend a lecture treating of the Roentgen rays, the first assistant of a celebrated professor of medicine in Wurzburg told me about a month after Professor Roentgen had published the first of his discoveries that that invention was absolutely valueless, as the camera could never be used to make the invention profitable or useful.

When, how, and against what targets may explosive shells thrown out of airships be most effective? It appears that some military authorities have great expectations of success in a regular firing or dropping of shells on live targets, the projectiles to be about the size of shrapnel. In my opinion, it is wrong to try and compete against artillery; the result will never justify the energy and ammunition expended. Still, single shells dropped on movable targets may, under favorable conditions, be very effective.

Under normal conditions, there will never be any use in dropping shells on a march column. The target is too small and counter measures are easily taken. More success may be expected by dropping shells on troops marching through a defile, especially in mountain passes. And in doing so the object is more to create disturbance and confusion than in making hits.

In order to harass a skirmish line effectively we would have to take a position immediately over it; this would in most cases be impracticable, because our own artillery may be firing on that line, and the hostile infantry would hardly allow the airship to stop unmolested over their heads. In dropping shells from a high altitude, say 1,000 meters, I agree with the opinion expressed of trying to spit on a coin.

Conditions will not differ much in case of smaller bodies in close order, such as companies, troops, etc. On the other hand, or more; we will cause confusion, for the target is broad and close column. In this case we can easily ascend 1,000 meters we may have good success in shelling a cavalry division halted in deep enough. In similar manner the concentrated vehicles of artillery in action are an excellent target. Firing on bivouacs, especially cavalry bivouacs, may often prove very advantageous, not because they are easy targets, but more on account of the moral effect produced and the confusion created by horses becoming unmanageable.

Should there offer no more profitable target, the airship may drop shells on baggage trains and ammunition and supply columns. Firing on general headquarters, army and other headquarters, may be very useful on the battlefield as well as when they are in quarters. In this it is immaterial whether men are hit or not; the main point is to cause confusion, to interrupt the issuing of orders and deprive all of rest.

In fortress warfare the besieged may be injured much by explosives, it is true, but under ordinary circumstances not much damage will result. It will hardly pay to drop shells on living targets; single batteries or armored towers offer targets too small to be successfully damaged from a great height. Our own artillery's fire may not permit the airship to hover over the fortress close enough to drop shells with accuracy. A well navigated airship may, however, before the general bombardment commences, travel low across the works at night and drop a few well directed shells.

The airship may, however, injure the besieged indirectly by destroying or setting fire to buildings in the fortress which can not be reached by the besiegers' guns, such as storehouses, magazines, ammunition depots, factories, water and gas works, etc. In this the airship runs no danger except when approaching and after leaving the fortress; and this danger may be lessened by choosing the night for the exploit.

The conditions are different with the defender. The concentration of men around the fortress, even if not in a continuous circle, is still large enough to make it pay to drop shells occasionally on live targets. The inanimate means of attack—

heavy siege guns—are and always will be the most dangerous for the fortress; these must therefore be fired on by all means. And in this the use of airships will be found of great advantage, because here it is a question of large targets and because, as a general rule, they are hidden from view of the gunners inside the fortress. Very often besiegers and besieged will benefit also by searchlights carried in airships and by aerial photography.

Before we discuss the subject of utilizing airships in naval warfare, we will mention a few targets which so far have not been discussed, but the destruction of which is of great importance. In the first line among these are the bridges over larger streams, either to delay or prevent a hostile advance or to interfere with the enemy's communications to the rear. The thought lies near that our Mosel and Rhine bridges will be visited by French airships immediately on the opening of hostilities. If an airship should be lost in such an undertaking, the loss would be immaterial compared with the result attained in destroying a bridge across the Rhine. Therefore we should take proper measures in time of peace: we should place balloon guns and proper ammunition at suitable points, and that *permanently*; and should arrange to have experienced men in their vicinity at all times who could quickly and effectively serve these guns. Whether or not these men should be in active service or from the reserves has to be decided by the proper authorities.

No one will doubt but what in war the Krupp establishment would receive an early visit from a fleet of airships. But it is hoped that there, as well as at other important points, timely arrangements will be made for defense and protection against such a fleet. We could easily cite other important points, and no difficulty will be found, either, by anyone to locate equally important points in the enemy's country.

According to my views, we must without fail organize a regular balloon message service if we do not want to encounter unwelcome experiences. The requirement of the French army authorities that each airship must have a radius of action of at least 500 kilometers leaves no doubt that the authorities there are fully cognizant of the importance of this new arm. This makes it necessary for us to station several airships on the frontier, which can immediately do battle with hostile airships, in addition

to placing balloon guns as above suggested. The fact that several airships have recently been stationed in Cologne shows plainly that our army authorities realize the importance of these requirements.

The airship will undoubtedly play an important role in naval warfare. Its reconnaissance activity, however, we will not discuss here. The proposal to carry small airships on the larger battleships, to be started up on the high sea, seems inadvisable to me. I rather believe that the airship will find its proper employment in coast and harbor defense.

The blockade will undoubtedly be the first means resorted to to stop our commerce; whether or not this can be achieved by the blockade is a different question with which we need not concern ourselves here. It is certain that a blockade can not be kept up all the time with the same ships. The personnel needs rest and coal supplies must be replenished; this means a regular relief of ships similar to that of sentries. The ships will certainly seek the nearest and best anchorages for their rest, and it will then be the task of the airship to seek out these anchorages and try and harass the ships by day and night. In this the dirigible has the advantage, in so far as no balloon guns, as far as known, have yet been invented which can be mounted on a warship, and may have to fear only the fire of machine or rapid fire guns of smaller caliber. But the airship can avoid this danger by utilizing the night and flying at a high altitude.

In order to bombard coast batteries, the warships, when practicable, anchor some distance from the defensive works; the airship, hidden by the powder smoke of the ship's guns, can fly close over the vessels and may successfully discharge torpedoes at them.

The airship may also interfere with landings; that is, by dropping or firing shells, similar to torpedoes, at the anchored transports, on the boats and rafts, in addition to firing shells and shrapnel at the men.

It seems unnecessary to cite more ways of utilizing the airship in naval warfare; it is apparent to everyone that they, under favorable conditions, will be a splendid auxiliary in defending our coast against invasion.

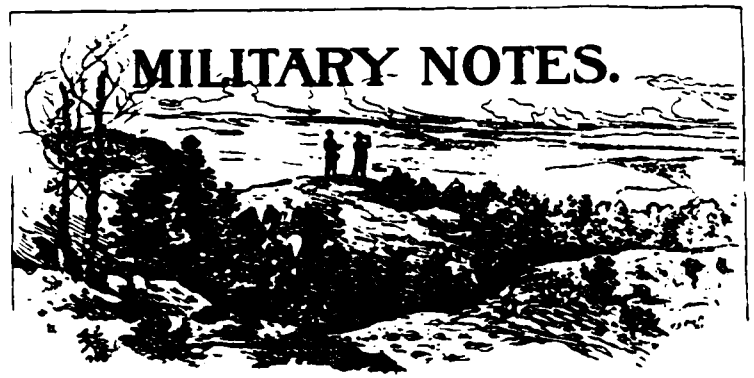
Airships alone will never be able to end a war; they will al-

ways remain an auxiliary arm. I believe I have shown that they will play an important role and deserve to receive the utmost attention of all officers of whatever grade. How large a role they will play will depend on their future development and on the degree of our proficiency in handling and utilizing them. One thing is certain, that under any and all circumstances the battle against hostile airships must be taken up with full energy at the very start of the campaign, since under the present conditions only an airship can do effective battle with another airship.

To recapitulate: The airship is an important arm in the hands of him who fully understands how to use it. The main duties of the airship are: Far-reaching reconnaissance; firing on live targets to some extent, but primarily on dead targets with shells and explosives; destroying hostile airships and captive balloons.

In order to efficiently perform these duties, regular, extensive courses in observation should be introduced for the older, specially suited general staff officers. A numerous, well drilled airship personnel is absolutely required. In addition, large sums of money are necessary to purchase the very best of materials; target practice on an extensive scale must also be had, which will require generous sums of money.

Under these assumptions the expenditure of all moneys in time of peace for airships will, when war comes, be found to have been wise and justifiable.



VETERINARY FIRST AID.

A book, under the above title, has recently been published in England which has received favorable notice in the British military magazines. It is by Major Axe of the British Veterinary Corps and of it the *United Service Magazine* says: "The amount of information compressed within its pages is astonishing. The hints on horse management on the march are admirable, although the skilled horseman may regard many of them as obvious. But it is owing to the neglect or ignorance of ordinary common sense precautions that mischief is usually done, and a lack of elementary knowledge is far too common. From a veterinary point of view, it may be said that Major Axe has provided for everything that an officer thrown upon his own resources can possibly be required to know. Amateur surgery carried beyond reasonable limits is usually more dangerous than useful. Every officer of mounted troops should have a copy of this valuable little work always at hand."

The appearance of this book suggests the idea that we should not only have a similar work for our service, but that it should

be one of the authorized manuals to be issued to the officers and organizations of the mounted services.

For many years we have had books on and instruction has been given in "First Aid to the Injured" man, and it would appear almost as important, possibly more important from a financial standpoint, that we should have a similar manual and like instruction for first aid to the horse and mule.

Many, very many, of our young officers, and possibly some of the older ones as well, are more or less ignorant of such matters as should be covered in such a manual. The idea should not be to make veterinarians of our officers of the mounted services, but that they should, as in the case of the human being, be prepared to render *first aid* to injured animals and to apply the simpler remedies to the sick ones, until the veterinarian can be called or in the absence of one with the command.

It often happens, not so frequently now as in the old days of service on the plains, that officers are thrown on their own resources in treating sick and injured animals, and they should be prepared to render such service.

This work, however, is intended only, as its title indicates, as a first aid book, and as such we should have a similar one in our service. E. B. F.

BEST BOOKS FOR CAVALRY OFFICERS.

The young cavalry officer who is filled with a love for his profession and takes pride in his work is anxious to learn, but is often entirely at sea as to where to begin. For such officers, and even older ones as well, the CAVALRY JOURNAL contemplates publishing from time to time a list of such books as are known to be first class and that have been recommended by students who are competent to judge of their merits.

While it is not advisable to read these works to the exclusion of all others until the list is finished, still it may be said that every cavalry officer should be familiar with these.

An officer's position requires that he should be educated, well informed and abreast with the times in all that pertains to his branch of the service, and this requires a certain amount of general reading. Moreover, the cavalry officer, as well as all officers, should remember that he is paid to know his profession and that the government is entitled to his best efforts for the best part of his time.

The course in reading outlined below will give an officer something to do for a considerable time, will give him an excellent start in the study of his profession and will enable him in the future to tell at a glance whether any particular military work is worth reading.

The authorized text books and manuals are presumed to be in the possession of every officer and he should be thoroughly familiar with them before commencing any other professional reading.

Studies in Minor Tactics. *Staff College Press.*

Letters on Applied Tactics. *Griepenkerl.*

The above two books, or others of a similar nature, should be carefully read in order to enable the officer to fully appreciate those that follow.

Cavalry in Future Wars. *von Bernhardi.*

Studies in Applied Tactics. *von Alten.*

Cavalry in Action. *From the French, with introduction by Lieut. General Sir J. D. P. French.*

Tactical Decisions and Orders. *Buddecke.*

Cavalry on Service. *Pelet-Narbonne.*

Cavalry Studies. *General Haig.*

The above are recommended for study in the order given.

Every officer should know something of the powers and capabilities of the other arms, and to that end he should read the following:

Quick Firing Field Artillery. *Roquerol.*

The Rifle in War. *Eames.*

Notes on Field Artillery. *Spaulding.*

Applied Principles of Field Fortifications. *Woodruff.*

For more general reading, the following are recommended:

On War. *Clausewitz-Graham's translation.* (This is not modern nor easy reading, but it is a most valuable work.)

A Summer Night's Dream. *Meckle.* (This gives a necessary corrective to many false ideas as to what really occurs on

the field of battle. Bound with it is a good study in minor tactics.)

Napoleon's Maxims of War.

Upton's Military Policy of the United States. *Government publication.*

All officers should read history, as a part of his general education, and should know something of the earlier wars, but particularly should he study carefully the more recent wars. Aside from our own wars, there are the following that are recommended:

1. The wars of Napoleon:
   The Life of Napoleon I. *Rose.*
   Napoleon as a General. *Wartenburg.*
2. The war in the Crimea:
   The War in the Crimea. *Hamley.*
3. The Austro-Prussian war of 1866:
   The Seven Weeks' War. *Hosier.*
4. The Franco-Prussian war, 1870:
   Strategy of the Franco-Prussian War. *Bird.*
5. The Russo-Turkish war of 1877-8:
   The Campaign in Turkey. *Greene.*
6. The Boer war:
   The War in South Africa. *German General Staff.*
7. The war in Manchuria:
   The Russo-Japanese War. *German General Staff.*

As to our own wars, there are no good works on the war of 1812 or the Mexican war, from a military standpoint, and the military student must get his knowledge of these from general histories.

The Struggle for American Independence, by Fiske, is the best work on the Revolutionary war.

There is a mass of valuable literature on the Civil war, all of which, however, should be checked by frequent reference to the Rebellion Records, which may be consulted in every Post library. The following are recommended:

The War of the Rebellion. *Scribner's Series.*

Military Memoirs of a Confederate. *Alexander.*

Personal Memoirs of Generals Grant, Sherman and Sheridan.

The following books on horses, stables, breaking, riding and the diseases of the horse are recommended:

Horses and Stables. *Fitzwygram.*

Horses and Riding. *Anderson.*

Breaking and Riding. *Fillis.*

Diseases of the Horse. *Department of Agriculture.* (A reprint of this work can be obtained for 75 cents.)

Illustrated Horse Breaking. *Hayes.*

Modern Horsemanship. *Anderson.*

There are few books on reconnaissance and scouting, but the following may be of use to the young officer:

Aids to Scouting. *Baden-Powell.*

The Art of Reconnaissance. *Henderson.*

COMMITTEE EXECUTIVE COUNCIL.

AN IMPROVED CAVALRY BOOT FASTENER FOR RIFLES.

It is one of the first duties of a cavalryman who dismounts to take his rifle from its boot, and therefore I assume that a cavalryman should contrive to have his rifle with him when he leaves his horse. I believe that the regulations require this of him. If, however, the horse falls or the man is thrown, the rifle and man are separated and the man is short his most important weapon.

The following idea, if practicable, will insure the rifle's being with the man whether he gets off his horse or is thrown off.

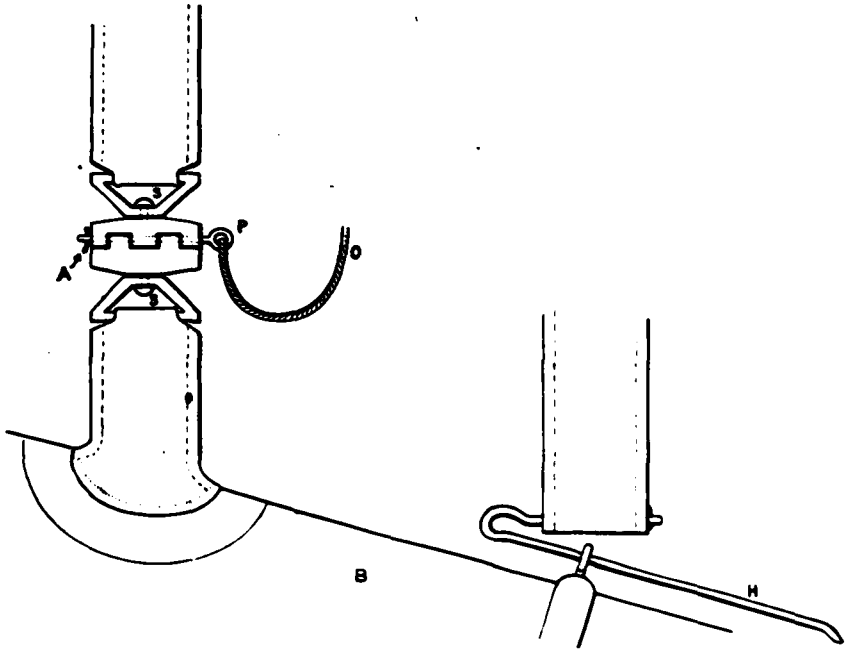
The plan is so simple that few words are necessary to insure a full comprehension of its mechanism.

Referring to the sketch, "B" is the rifle boot which is joined to the saddle by the strap and fastens as shown at the upper end, and by a strap, through the hook "H," as shown in the lower end.

Between the boot and the saddle is a swivel mounted "fastener" which is so constructed that a heavy weight on the lanyard "C" will pull the pin "P" from its fastener "A," thus releasing the joint and allowing the boot to drop to the ground.

The hook "H" is so constructed that the ordinary "jounc-

ing" incident to galloping, etc., will not release the lower end of the boot, but will only allow it to fall when the upper end of the



IMPROVED RIFLE-BOOT FASTENER.

boot drops to the ground, as it will when the joint above is released by the automatic fastener.

It will be noticed that the "fastener" is swivel mounted, so that it will operate as well when the man leaves the horse to the front, rear or to one side.

The pin "P" is secured ordinarily by a soft wire keeper, which gives and allows the pin to be pulled out under an extraordinary weight such as a man falling from a horse would produce. The lanyard "C" is fastened from the pin to some part of the rider, such as his belt or legging, by a clip, which is to be secured when he mounts.

ROBERT DAVIS.
1st Lieut. 2d Field Artillery.

FIELD ARTILLERY EXPERIMENTAL FIRING.

Fort Riley, Kansas, October, 1909.

The present tests had their origin in the experimental firing held at the same place two years ago, the results of which indicated that there was room for improvement in several directions. A short description of the redoubt at which the firing was done at that time and of some of the features of the firing may be found on pages 353, *et seq*, of the CAVALRY JOURNAL for October, 1907. In the tests just finished, the firing was done at the old redoubt and also at a new one. This second redoubt is similar in many respects to the old one. The trace is varied somewhat and the overhead cover is also varied in material and thickness for the purpose of determining the effect of the various projectiles on each. Details of this redoubt, as well as the technical results of the firing, are confidential.

"The objects of the tests are, in general:

"1. To determine the efficiency of the different types of field cannon proposed for adoption in the United States service, at ranges corresponding to the type of gun used.

"2. To determine the resisting power of modern field works and trenches against such field cannon.

"3. To determine the relative and actual efficiency of projectiles adopted and proposed for adoption with such field cannon."*

The firing extended over the period October 4-16 inclusive, Sunday excepted, being divided into four sections as follows:**

"A. Test of the absolute and relative efficiency of plunging fire from the 3.8-inch, 4.7-inch, and 6-inch howitzers with high explosive shell against type redoubts; using non-delay action fuses with the 3.8-inch howitzer, and delay action fuses with the 4.7-inch and 6-inch howitzers." Ranges 5400 to 6200 yards.

"B. Test of the absolute and relative efficiency of direct fire from the 3-inch, 3.8-inch, and 4.7-inch guns and 6-inch howitzer using high explosive shell with non-delay action fuses with the 3-inch and 3.8-inch guns, and delay action fuses with

*Official program.
**Idem.

the 4.7-inch gun and 6-inch howitzer; against (a) type redoubts, (b) separate walls, (c) material.

"(b) 3-inch field gun. 3.8-inch field gun. 10 high explosive shell with non-delay action fuse fired from each gun against a stone wall 6 feet thick, 6 feet high; and 20 feet long. Range about 2200 yards.

"(c) 3-inch field gun. 15 high explosive shrapnel against limber filled with high explosive shrapnel in position. * * * Range about 1100 yards. This test is for the especial object of determining whether a hit on limber filled with these experimental projectiles will produce detonation.

"C. Test of the absolute and relative efficiency of high explosive non-delay action shell, F. A. shrapnel, and high explosive shrapnel fired from the 4.7-inch gun at targets representing troops beyond the effective range of light field guns.

"Tactical conditions. Our force is assumed to be occupying the ridge Campbell Hill-Sumner Hill and is engaged with the enemy who are holding the line Carpenter Hill-Saddle Back. From a point on Campbell Hill the C. O. of a battery of 4.7-inch guns can see the enemy's infantry in column of route, moving along the Estes Road near 16, about 7000 yards away.

"(a) Targets: Four hundred box figures 5 feet 6 inches by 12 inches by 12 inches, representing a battalion of infantry in column.

"The B. C. observes in the same general direction, infantry resting in mass in apparent safety; range about 7000 yards.

"(b) Targets: Four hundred box figures 5 feet 6 inches, inch mountain gun, 3-inch field gun, 3.8-inch gun, 3.8-inch by 12 inches by 12 inches, representing a battalion of infantry, in massed formation.

"D. Test of the absolute and relative efficiency of the 3-howitzer, 4.7-inch gun, 4.7-inch howitzer and 6-inch howitzer against personnel intrenched, using high explosive non-delay shell, high explosive shrapnel and F. A. shrapnel; at ranges corresponding to the type of gun used—close, medium and distant." Targets: silhouettes in simple standing trench, in trench with head cover, and in trench with overhead cover. Ranges 1700 to 6200 yards.

The program provided for more than 500 shots to be fired

under the various conditions. It will be noticed that no spectacular infantry attack on the redoubt was provided. One was made two years ago as a part of militia instruction. The effectiveness of such an attack can be ascertained only by actual trial in war.

The firing was under the direction of the Field Artillery Board. Other official observers included officers of the Engineer and Ordnance departments. In addition, there were many other officers present out of general interest in the subject, among whom were the Chief of Coast Artillery, officers of the General Staff and Signal Corps, the Army Staff Class, several instructors of the Army Service Schools, and several officers, chiefly of the cavalry and field artillery on leave and at their own expense.

The 3-inch gun used is the one with which our field artillery is now equipped. The new types tested are the 3-inch mountain gun, the 3.8-inch gun and howitzer, the 4.7-inch gun and howitzer, and the 6-inch howitzer, of which one each and two carriages were furnished. A high power observation telescope of the prism type, mounted on a tripod, was used. These are supposed to be supplied to the battalion and regimental commander. In campaign, all higher headquarters should be equipped with an instrument at least as good as this one. There were also used in the field lines of communication some experimental telephones which had points of advantage over the buzzers now in use and which will probably lead to the development and adoption of a superior instrument.

While the official deductions and recommendations concerning the tests and the material are not known, the general impression seemed to prevail that the 3.8-inch gun and howitzer would not be adopted. This is due to the fact that this series is not sufficiently powerful over the 3-inch guns to justify its adoption. The opinion also appeared to prevail that our field artillery as finally adopted should consist of the 3-inch mountain gun, the 3-inch field gun, 4.7-inch gun and howitzer, and the 6-inch howitzer. The 6-inch howitzer has sufficient mobility to keep pace with infantry on the march and is strictly an attachment of the field army.

To the observer there were many points of interest to be

noticed, one of which is the pulverizing effect on the projectile of high explosives.

While the firing was in progress a good opportunity was given to observe the zone in front of a trench or other work upon which our artillery is firing within which it will be unsafe for our attacking infantry to advance so long as the firing continues. So many conditions here existed that would be materially modified in war as to render all views merely conjectures.

HOWARD R. HICKOK.

Fort Leavenworth, Kansas, October 17, 1909.

Problems.

PROBLEM NO. 13.

(See JOURNAL U. S. CAVALRY ASSOCIATION, September, 1909, page 379.)

SOLUTION.

Presuming that Colonel A. is a man of good tactical judgment and education, his *coup d'oeil* will take in the situation at a glance, his decision will be formed instantly, and his orders will be issued verbally immediately upon receipt of his division commander's message. The course of reasoning by which he arrives at these conclusions is somewhat as follows:

Estimate of the Situation.

The division is now advancing to capture the hostile position. I have been ordered to "co-operate in the movement, operating against the hostile right and rear." The method of carrying out these instructions is left to my discretion. Either or both offensive and defensive action may be necessary. This, however, I cannot determine without weighing the different alternatives.

The line Atchison Hill-Sheridan's Drive is now held by the enemy. While no mention is made in the message of Government and South-West Hills, it is probable that these hills were visited by our patrols and that the enemy was not then in force there. An examination of the map indicates that the enemy's position, when fully established, should extend to include the saddle near the cemetery southwest of South-West Hill. The

slowness of arrival of the hostile cavalry is of advantage to my mission and to my division and simplifies my present duty.

Ten minutes ago the enemy's cavalry was at Hund Hill and has probably continued to advance. It could have turned south at 28, but that is hardly probable, for such a route would involve a long detour via 50 and through the woods to 68, or through a long defile via 52 to 56. Scouting parties may, however, advance by these routes. If it continue to advance at its previous rapid gait, its head should now be near 24 or even descending the hill eastward of 24. The further intentions of the enemy's cavalry are unknown, whether to create a diversion on our left and rear or to protect and operate in connection with the hostile right. If its mission be to protect and operate with the hostile right, the cavalry may move forward from 24 to the right of the main position near 22. The strength of the hostile cavalry is unknown, but as the message of the division commander indicated the force encamped yesterday at Lowemont to have been about a division, the cavalry now advancing is probably the divisional cavalry or the greater part of a regiment. I may not only have to oppose this regiment, but may also become engaged with the left of the enemy's line of battle in doing so.

The opening of hostile artillery fire would indicate that my division has offered some kind of a target, most probably by advancing to the attack. From the information contained in the message as to the hostile strength, opposing forces are about equal. The capture of the hostile position is essential to the security of our foothold west of the Missouri River. Aggressiveness is, therefore, necessary and this is the course my division commander has adopted.

In front and close at hand is a line of hills and ridges which have a general trend east of north, being more or less wooded and rising 100 feet or more above the immediate terrain. The enemy's position is on this ridge a mile or more to the north. My command is just now near a small stream, which heads a mile or so farther west and deeply indents the ridge. A road follows up this stream and about half a mile from here (at 56) it forks, one fork leading to the southwest and crossing the ridge at 44, and the other fork leading to the northwest over the ridge

via 24 and 30. It was on this last road that the enemy's cavalry was reported as advancing a few minutes ago. Both of these roads are defiles as far as the crest of the ridges, and should I advance by either of them the enemy's cavalry would have a most excellent opportunity to take me as in a *cul-de-sac*. Should I advance to 56 and take the fork toward 30, called the Zimmerman Road, I would probably be brought under a heavy cross fire from the Haug Hill and from the 24-22 ridge. Should I move toward 44, I could be brought under a disastrous flank fire from the crest of the Haug Hill without means of replying thereto. In such a movement the battery could assist but little. The only available position near at hand for such a movement is on the spur about 400 yards west of here. Even that position has a very narrow field of fire with the comparatively short ranges of the eastern crest of Haug Hill. To be sure, the possession of the Haug Hill would give me a good point from which to operate against the hostile right and rear.

There is a road south of here, running west from 68, turning north at 50 and finally crossing the two roads just discussed This road is much longer and the first part is through the woods. It has the advantage of following high ground all the way. If the 60-56 road be covered, the left of our division will be protected. If the 60-56 road be given up and an advance be made by 68-50, the left of the division will be exposed to the operations of the hostile cavalry. I could leave part of my command, say a squadron, here to block the 60-56 road and with the rest of the command move via 68-50-44. That would be a good move against an inferior force of cavalry, but there are good chances here that I am opposed by about an equal force. Such dispersion is so great that there is a great probability that the scattered parts may not co-operate in any subsequent engagement.

Just southwest of here is a hill or ridge, a part of the main line of ridges, the woods on which extend down a distance on the northern slopes. If I occupy the edge of these woods with my command dismounted, I can prevent the enemy from advancing by the 56-60 road and I will also be in a position from which I can quickly move, should the hostile cavalry make a detour by 50-68. In this position I would also be conveniently located for

withdrawal after the engagement, should our division be unsuccessful. However, should the enemy's cavalry join the main hostile defensive line while I remain in this location, I would occupy a passive attitude toward the engagement and would be contributing nothing in aid of my division.

I could remain where I am until the hostile cavalry gives further indication of its course of operations. That, however, may be a waste of valuable time, now in the fleeting changes of battle when moments are golden. For example, should the hostile cavalry march eastward to 22 while I remain here, it could connect with its main body without my having offered any opposition.

The spur northwest of 60 appears to offer some points of advantage. My command can reach it quickly and will then be on the same elevation as the troops of the enemy now to the north and to the west. This spur is covered with timber and must be traversed before the open ground with a field of fire to the north and west is reached. I will have some trouble in taking my horses through these woods, even using the obscure roads therein, and also some difficulty in withdrawing them should I be forced to retire. When I reach the saddle near the cemetery, I may be able to advance farther west against the hostile cavalry, though the probability exists that I will be met in that vicinity by this cavalry on my left and my hostile infantry on my right. I can make no use of the battery until I secure the western edge of these woods, and, perhaps, not then. This hill is a salient, pointing away from the hostile position. Should our troops suffer a repulse, a retreat from this hill will be a difficult matter. However, by my occupying this hill, the hostile cavalry cannot use the 56-60 road. Should it make the detour via 50-68, my patrols should give warning in time to enable me to intercept it. Further, if I occupy this spur and do nothing more than to engage the enemy's troops in that vicinity, I will be creating a diversion in favor of the main attack of my division.

It seems that the advantages of every alternative open to me can be countered by one or more serious disadvantages. Balancing the one against the other, an advance to the hill northwest of 60 will be of more advantage to my division. Immediate action is necessary and, as nothing will be gained by leaving

any part of my command behind, I will move out rapidly with my entire command, preceded, of course, by part of the command as advance guard. The patrol now out on the 68-50 road should be sufficient to give me timely warning of any hostile approach from that direction, but, in order to prevent any mistake on that point, I will dispatch another one.

My staff, field officers, and the battery commander having assembled, I give them the following verbal orders:

Orders.

"The enemy occupies a position on that (pointing) ridge a mile and more north of here and has just opened fire on our division which is advancing to attack the position. Hostile cavalry was advancing on that (pointing to 56-30) road a few minutes ago and scattered one of our patrols.

"We will advance at once to secure that hill (pointing to hill northwest of 60).

"Major A., take two troops of your squadron and move out rapidly as advance guard, by this road (the one through 60), and take the shortest route to the top of the hill designated. Push ahead until you reach the clearing at the northwest of the hill.

"The remainder of the command will follow at 400 yards, in the order, remaining troops 1st Squadron, 2d and 3d Squadrons, and the battery.

"Major D., send an officer's patrol of five men via the 68-50 road to report promptly any hostile advance by that route.

"I will ride at the head of the main body."

I also inform the division commander of these dispositions by a message, which is returned by the staff officer who brought me his instructions, as follows:

"Hostile cavalry is advancing by *Zimmerman Road*. In compliance with your instructions to co-operate in our division's movement, operating against the hostile right and rear, I am advancing with my entire command to vicinity of cemetery near 22."

PROBLEM NO. 14.*

(See Map of Fort Leavenworth—CAVALRY JOURNAL for July, 1907.)

SITUATION.

A Blue division, operating against a Red division which is advancing on the west bank of the Missouri south of Saint Joseph, Missouri, has arrived at Lansing (10 miles south of Leavenworth).

On 1 October, 1909, the 2d Squadron and Machine Gun Platoon, 1st Blue Cavalry, having been detached on a special mission to the north of Kickapoo with instructions to return to Lansing upon its completion, has accomplished its mission without having seen anything of the enemy and is returning via Frenchman—64 road. At 3:00 p. m., as Major B., at the head of the main body, arrives at the road cut north of Government Hill, he looks back and observes a mounted force in extended formation about a mile or more in length moving east on Atchison Pike, its head a short distance west of the Mottin house.

A trooper from the advance party now rides up and informs Major B. that the advance party has halted under cover north of Atchison Cross, that a few mounted men are moving south on Grant Avenue near Metropolitan, a few more can be seen on Grant Avenue at Pope Hill, that the dust along Grant Avenue is rising as far back as Fort Leavenworth, and that a patrol of three Red troopers moving south on Prison Lane is just crossing Long Ridge.

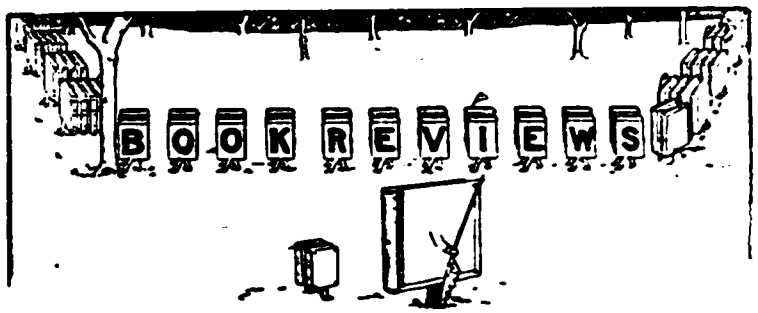
A corporal now rides up with a Red trooper, which he captured at 18, the other two members of the patrol escaping, and says that a Red mounted force, head of its advance guard now just south of Avenue Hill, is moving at a walk east on Dakota Street, and that considerable dust is rising in the valley west of 60. The captured trooper says that he belongs to Troop A, 3d Red Cavalry, that there are two troops in his column, and that

*The approved solution will appear in the January number of the Cavalry Journal.

his entire regiment was together at noontime, but does not know where the other troops are now.

REQUIRED:

1. Major B.'s estimate of the situation.
2. His initial orders.
3. His further intentions.



The struggle for American Independence.*

These volumes are an enlargement and a completion of Mr. Fisher's earlier work, "The True History of the American Revolution," and they ought to be read by every American student who seriously desires to have a historical rather than a merely partisan view of our forefathers' great struggle for national freedom. Mr. Fisher is the first American historian who has undertaken to give us a glimpse of the other side—the English view. In fact, there are three views, all as far apart as the apices of an equilateral triangle. The first is the English or Tory view; the second is the Whig view, which one gets by reading Trevelyan's history of the Revolution; and the third is the American view, the only view heretofore taken by any American author—the view that we have all grown up with from the school days of our youth. Few Americans have taken any other view of the struggle. How many of us have ever seen a British account of that war? How many even have read Professor Goldwin Smith's fair, friendly and, withal, charmingly written epitome of the history of the United States?

From our childhood we have learned that George III. heaped

*"The Struggle for American Independence." By Sydney George Fisher. J. B. Lippincott Co., Philadelphia. Two volumes. Price $4.00.

outrages upon our long-suffering ancestors, until at last the burden became more than they could bear; that then they rose and put forth their might to cast it off. We have read Fiske and the other historians only to get the details of the struggle. On the one side we have learned of nothing but wrong and injustice; on the other of nothing but right and grievances. And we have not been taught that there was any division of sentiment or opinion among Americans; we have been led to suppose that they were practically a unit from Vermont to Georgia; that loyalist Americans were renegades too few to be considered, too wicked to be thought of but in scorn; and the name Tory by which they have descended to us is to the ordinary American a synonym of traitor with every added adjective of crime and inhumanity. Mr. Fisher, on the other hand, presents to us the novel view that there were really two political parties in America, one of which was for separating the colonies from the mother country, and for setting up an independent state, while the other was for keeping the colonies a part of the British Empire. Probably neither party was wholly satisfied with all the acts of the government relating to the colonies, but the Tories or loyalists believed in having patience and waiting for the righting of their grievances; while the party of independence, the patriots, as our historians have been pleased to call them, were for throwing off the yoke of British rule altogether. Of course, the patriots in time came to outnumber the loyalists, but the latter were far more numerous than our histories have generally led us to believe. Indeed, in some sections, like New York, the loyalists were largely in the majority.

Moreover, our other historians have given us to believe that our Revolutionary ancestors, once patriots, remained so through thick and thin to the end; that they would have kept up the struggle to doomsday rather than yield. From Fisher we get a very different picture. We find—and he quotes most respectable authorities—that the loyalists formed a very considerable part of the population, and that there was much defection among the patriots. Even John Adams in 1815 admitted that a third of the people had been loyalists, and many creditable authorities place the estimate much higher. Few of us know, or stop to consider, how large a number of Americans actually bore arms on the

British side in the war. In fact, the author says the Revolution was "more a civil war than the conflict between the States in 1861; because that was essentially a war between two sections of the country, while the Revolution was a war between two parties each of which was numerous in every part of the country."

When we remember that out of a population of "three million people armed in the holy cause of liberty" Washington could only raise and maintain continuously an army of "between 5,000 and 10,000 men," we must be persuaded either that our ancestors were not all on the side of independence, or else that their fighting spirit was not of the highest order. And our opinion of their patriotism is not strengthened by the picture of Washington's soldiers in rags and with bleeding feet at Valley Forge, "surrounded in every direction by a rich farming country * * * while the farmers voluntarily brought and sold their supplies to the British in Philadelphia, leaving the patriots to starve."

Other historians have given us to believe that our people would have been content to remain British subjects if they could only have obtained redress of their grievances. To our mind, Mr. Fisher's view does greater honor to the spirit of our forbears—the view that the war was the outcome of a desire among our people, which grew into a purpose, to become free and independent with allegiance to no government, but a government of and by themselves. Slaves that arise in their strength and cast off their yoke for the simple sake of becoming freemen command our respect and admiration far more than slaves that endure until driven by sheer desperation to strike for freedom.

The author traces ingeniously, logically and entertainingly the evolution and growth of the independence party which at last became strong enough in numbers and influence to overthrow the loyalist party in America and the British authority. He shows how most of the early colonies had been granted very liberal charters by the British crown in order to encourage the emigration of troublesome religious sects from England, such as the Puritans of New England, the Quakers of Pennsylvania, the Romanists of Maryland, and, at the time of Cromwell, the Episcopalians of Virginia. In fact, the early settlements were

not colonies at all in the modern sense of the word; they were absolutely free settlements bound by no colonial ties to the home government. It was not until after the American Revolution that the English organized a real colonial system. The perfect independence of these early settlers was the germ from which sprang the principles of the "patriot party" of Revolutionary times; and our ancestors gained strength in their political faith and acquired the forms in which to give it expression and argument by reading the works of Puffendorf, Locke, Burlamarqui, Beccaria and Montesquieu.

Not, however, until the authority of France was expelled from America did any occasion arise for their asserting and insisting upon the principle of absolute freedom. The presence of the French in America served as a restraint to the colonists as well as to the home government of England, and as a bond to hold them together. The colonists dreaded the contact and the encroachments of the French, and feared that they might, if left to themselves, fall under French authority; hence they were glad to cling to England as protector; whereas England counted on the support and aid of the colonists to oppose the French aggressions in America; hence the mutual dependence of the crown and the colonists, and their mutual forbearance. But as soon as this restraint had been removed the crown began to assert its rights over its colonial subjects, and the Americans began to insist upon their principles, based upon charter rights. This brought about a quarrel that lasted for ten years and ended in war.

Thus, in 1764 the government undertook to suppress smuggling in the colonies and to enforce certain colonial laws that had long existed, though they had not hitherto been enforced; but the effort aroused such violent resistance that "when the year 1774 was reached the mobs and tar-and-feather parties had driven so many British officials from office that all attempts to check smuggling and enforce the trade laws were necessarily abandoned until the army could restore authority." This use of British troops was the origin of our national dread of a regular army and of the bogy of militarism. Up to this time soldiers had

never been stationed in America for the purpose of keeping order amongst the colonists.

The colonists drew a fine distinction between external and internal taxes, denying Parliament's right to levy the latter, while admitting its right to levy the former, which they avoided by smuggling. The author says the distinction "was absurd * * * but was good enough to begin with; and the Revolution, during the seventeen years of its active progress, was largely a question of the evolution of opinion." He points out other inconsistencies wherein the colonists admitted Parliament's right to do some things, and denied its right to do others, in which its authority was equally as clear.

Mr. Fisher has adopted the old-fashioned method of giving his authorities in foot-notes. Of course, people generally do not waste much time in reading foot-notes, but if anyone doubts the author's statements, he can, by this means, satisfy himself by looking up the originals.

Some persons there are, no doubt, who will say they do not want to read any book that will change their point of view of their Revolutionary ancestors' deeds, and they do not want their children to read or study such a book. But those persons are wrong; they do themselves, their country, and their children an injustice. Small men may cloak the indiscretions and sins of their youth; but great men can admit theirs with impunity. By so doing they only give further token of their superiority. So a weak and struggling nation may need to conceal the evil deeds of its past from its people, lest it weaken their pride and their patriotism; but not so a great nation. The United States today, with her commanding place among the powers of the earth, can trust her people to love and honor her in spite of some of the acts of her past; she has no need to conceal any truth of her history.

The author appeals to military students by reason of his clear comprehension of the strategy and tactics involved in the military operations. His descriptions are lucid, and full enough of details to be easily followed, yet brief enough not to be tiresome. The two octavo volumes of nearly six hundred pages each are very tastefully wrought, the type is large and clear, the paper

is of the dull yellowish tint most comfortable to the eye, the index is full and well done, and the mistakes of proof-reading are rare. The author's style is simple and pleasing. On the whole, this is the best history that has been written of the American Revolution.

M. F. S.

Military Hygiene.*

The fact that within six months no less than four handbooks on Military Hygiene, primarily intended for the use of line officers, have been published in the English language, gives evidence of the increasing attention which this most important subject is at last deservedly receiving. It is highly gratifying that of these four books, three should have emanated from medical officers of our own army, viz: General Woodhull, Colonel Havard and Major Ashburn. All of these are about alike in the character and scope of subjects treated, and, as their appearance has been almost simultaneous, it has not been possible for one to have advantage over the others in more recent knowledge of sanitary advance.

All are excellent and up to date, and we can not have too many books of their sort and character.

It is becoming more and more appreciated by line officers that the real purpose of military hygiene and sanitation is not merely humanitarian, and thus a subject in which line officers can be only casually interested, but that its true function is practically utilitarian in the prevention of the unnecessary waste of men under arms. That such waste of the most important, essential and costly of all military resources may exert a profound influence on purely military plans, purposes, movements and strategy is evident to the most superficial reader of military history, in the pages of which epidemics of preventable disease constantly figure in bringing about the modification or abandonment of campaigns and as the cause of disability and resulting disaster.

Given opposing forces of equal numbers and efficiency, the

*"Military Hygiene for Officers of the Line." By Brigadier General A. A. Woodhull, U. S. Army, Retired, late Colonel Medical Corps, U. S. Army. John Wiley and Sons, New York. Fourth Edition — enlarged. Price $1.50.

one which pays less attention to the prevention of disease will ultimately find itself in a position of what may be such decisive numerical inferiority and lowered efficiency as can not be offset by the highest degree of military genius on the part of its commander.

It is therefore to be regretted that General Woodhull and the several of the contemporaneous authors on the subject have not more specifically impressed upon their line officer readers the fact that military hygiene, which has for its direct object the conservation of the soldier and the maximum strength on the firing line, lies at the foundation of all military efficiency and must necessarily be presented to military students as a part of military economics in which the line officer and strategist—and not the doctor and humanitarian—is chiefly concerned.

General Woodhull is, of course, well known as a pioneer in the instruction of line officers in the care of troops. In his latest (fourth) edition of his book he has very wisely departed from the former somewhat dogmatic enunciation of sanitary principles which left unexplained many matters which would naturally suggest themselves to the inquiring mind. His new work is very readable and presents in attractive and entertaining form a subject which in some books is set forth in dry, prosy and uninteresting manner.

Together with its subject matter, the literary style and general makeup of the book are excellent. The volume is rather meagerly illustrated for a work of its character, and such cuts as there are do not seem in all instances to be as well selected as they might have been. But on the whole the work is admirable and well suited to the purpose for which it is intended.

It is a cause for just pride on the party of the Army Medical Department and for sincere congratulations to General Woodhull that nearly six years after his retirement for age he retains the inclination and ability to prepare a work of such excellent character. His unceasing and helpful interest in military affairs is in refreshing contrast to the too common attitude of line officers; and his activities go far to demonstrate the fact that age is a condition and not a period of years, as some would have us believe.

E. L. MUNSON.

Provisioning of the Modern Army.*

According to an introductory note prefixed by General Sharpe, the revision of his original work under this title was undertaken by Captain Cook with the idea "that by additions to the text and rearrangement of the subject-matter he could bring the volume up to date and make it adaptable for use as a book of reference, or a military text-book for schools, there being no American work which included a summarization of the varied and extensive literature on the subject."

The subject matter of the original has been considerably rearranged, some has been omitted entirely, and a few additions have been made. Among the additions is a solved problem, involving the number of four-mule wagons necessary to carry the rations and forage for a division of Field Service Regulations strength, for a distance of seventy-five miles in front of an advance depot. The original subject matter has been much condensed, so that little more than bare abstract principles remain. The addition of the solved problem is a step in the right direction toward using the "applied methods," now coming into general use for instructional purposes. This method could probably have been further used in the revision by the introduction of concrete examples from the most recent war, with maps showing bases, depots, and lines of communication.

The revisor takes a shot at paper work—the bugbear of our army—in the following words:

"In time of peace a well organized supply department has no occasion for rush, and the tendency of thoughtless officials is to prescribe a system of accounting so rigid and exacting as to impair efficiency of the army if continued during war. To expect officers, when war comes, to burst suddenly all this red tape of accountability and assume the responsibility of prompt action, is not a logical sequence of such a system of training."

To this statement of the case, our officers will respond with an unanimous "Amen" and will fervently hope that the chiefs

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*"The Provisioning of the Modern Army in the Field." By Brigadier General Henry G. Sharpe, Commissary General, U. S. Army. Revised Edition by Captain Frank A. Cook, Subsistence Department, U. S. Army. 1909. Franklin Hudson Publishing Co., Kansas City, Mo.

of supply will effect the proper remedy.

The book is a readable treatise on the subject matter indicated by the title, and, if the military student has not already a copy of the original, he may do well to supply himself with a copy of the revision.

HICKOK.

Elements of Military Hygiene.† This convenient handbook of the elements of military hygiene is primarily intended for the instruction and guidance of line officers and enlisted men. It has already been adopted by the War Department as the official text book in this subject for use in the garrison schools, to which it is particularly adapted, and in which it will undoubtedly serve a most excellent purpose.

The book is compact, excellently gotten up, well planned and entertainingly written. The effort has been to create an up-to-date presentation of the more important facts relating to the prevention of disease, without going into the lesser details of the subject. In this the author has been very successful and he has produced a practical guide for the care of troops, with the subject matter of every page of which every line officer should be familiar.

So far as the enlisted men are concerned, the more intelligent will undoubtedly largely understand this book and derive much benefit therefrom; but for that considerable proportion of soldiers whose education is rudimentary or defective, this book, even in the simple language in which it is written, will probably be too technical. However, a book specially prepared for this latter class would necessarily savor too much of the primer style of instruction to appeal to officers and to enlisted men of higher attainments.

The author, with his broad knowledge of the subject, is of course under the constant temptation to drift into detail and add material whose practical value is not really commensurate

†"The Elements of Military Hygiene." By Major P. M. Ashburn, Medical Corps, U. S. Army. Houghton, Mifflin & Co., New York and Boston. Price, $1.50 net. Postpaid.

with the resulting increase in the size of his book. Some evidence of inability to resist entirely such temptation is found in the mention of yaws, a disease not even common in medical practice, and other similar instances might be adduced.

For its special purpose the present book is large enough, and its text could probably be cut down by ten or fifteen per cent. without any loss in practical value. On the other hand, the book is entirely without illustrations, and there is little question but that a reasonable number of well chosen cuts would add very materially to its attractiveness and usefulness to the average reader.

Major Ashburn is to be congratulated on the production of a thoroughly good book, the use of which in our service cannot fail to result in humanitarian benefit and military advantage.

E. L. MUNSON.

Editor's Table.

A PLAN TO PROMOTE THE EFFICIENCY OF THE ARMY.

Although but few replies have as yet been received regarding the proposed plan to equalize promotion, etc., in the army, those that have come in are strongly in favor of some such scheme.

Of it one of our field officers of cavalry writes: "I wish to congratulate you and the association upon the 'plan' submitted for the efficiency of the army. I endorse each proposition and will assist to my full power the proper authorities to the adoption of the scheme."

Another cavalry officer speaks well of it except as to the proposition for transferring officers as proposed for the purpose of equalizing promotion upon an increase of any one branch of the service. This one section gave more trouble and was more fully discussed for several months by the Fort Leavenworth branch, and it was thought that it would probably provoke more comments, than any other.

In this connection, the following extracts from a letter from Major R. H. Noble, First Infantry, will be of interest:

"I am not envious of the Navy, but my opinion is that their scheme of promotion is probably more liberal than the country will stand for, for the Army. We are just as much entitled to promotion and efficiency tests as they are, but, unfortunately, the Army has not the hold on the public heart that the Navy has, and a great deal of the public interest in the soldier is bestowed

upon the National Guard. For this reason, as you will note, my scheme of promotion is very moderate, and for the same reason I am very sure that the cavalry scheme to promote the efficiency of the Army, as published in the September number, which provides 'that any field officer of *thirty* years' service may elect voluntarily to retire with the *next higher grade*,' is not moderate enough. I think the effect of this would be that a considerable number of officers, who might, and ought to be, eliminated without any further promotion than they have secured, will want to hold on to the very end. Major generals will want to retire as lieutenant generals, brigadier generals as major generals, and so on down the line. It seems to me that 35 or 40 years would be a better requirement for such preferment, and it should not apply to any officer above the grade of colonel. There are undoubtedly a number of colonels, lieutenant colonels, and perhaps majors who have been over-slaughed, or who have been in bad luck in promotion, who have many weary years of Indian frontier service and Spanish-American war service to their credit, who are worthy of such promotion.

"If such a law were passed, in a few years most of these would have been promoted and provided for, and after that it would be only an exceptional officer who would be entitled to retire with an additional grade. I think it would be not amiss to count the service in the tropics double for retirement, so that with 30 years, 10 of which have been tropical, one could retire, under the 40-year provision, but I do not see why the additional grade should be granted.

"I do not know that you are especially interested in my opinions on this matter, but if you happen to think as I do, it might do no harm to call it to the attention of the cavalry committee.

"I think my suggestion of 35 years of service, or perhaps 32 years' actual service, eight of which have been spent in the tropics, with retirement with one increased grade, is a more reasonable proposition, and more likely to be adopted; but I do not look for the adoption of anything much more liberal than the present law:

"If all our colonels were selected, undoubtedly most of them

would reach the grade of general officer before they retired; but I do not see any reason why everybody should reach that grade, even on the retired list, for mere length of service."

MACHINE GUNS.

Whatever may be the opinion of our cavalry officers regarding the use of machine guns with cavalry, it is evident that all foreign countries are believers in their use. Almost every foreign magazine received has one or more notices of improvements in them or of an increase of their number being made in some army of Europe, and possibly no one subject is discussed more fully than is this one.

It is true that the questions of airships and auto cars are receiving much attention, and many countries are experimenting with them, but at the same time these are considered in the experimental stage, while machine guns have, they believe, proved their worth.

Many of their writers advocate lighter machine guns for cavalry and that their use in any case where it interferes with its mobility is detrimental. Captain J. C. Lavau in his book, "Machine Guns with Cavalry," states that the mistake was made in all European armies when these guns were first introduced in looking upon them as light artillery and in making the personnel of the machine gun detachments too large, whereby the mobility of the cavalry was seriously affected, and that by adding to cavalry light machine guns, which can be carried on a horse's back, the necessary fire power is added without interfering with the mobility or the spirit of the cavalry.

In this connection the following extracts from a description of "The Perino Machine Gun," translated from the *Revue Militaire Suisse* by First Lieutenant West C. Jacobs, Coast Artillery Corps, and which appears in the September-October, 1909, number of the Journal of the United States Artillery, will be of interest:

"We scarcely recognize the great advantages of foreign

makes of machine guns, like the ordinary Maxim, which weighs 49 kilograms complete, the tripod weighing 20 kilograms; the light Maxim, weighing 20 kilograms; the Bergman, weighing 12 kilograms; the Madsen, with which Denmark has experimented very successfully, and which, while weighing only 6 kilograms, fires automatically 300 rounds per minute and can be carried, with its forked rest and 1000 rounds of ammunition, by a single trooper on his horse; the Schwarzelose, light, strong, and very compact, with which Austria has, during the past year, conducted experiments with a view to using it for her Alpine troops, and which has been adopted by Holland; and the Vickers-Maxim, which has been bested by the Perino machine-gun at competitive trials held in Italy.

"The Perino machine-gun has a single barrel surrounded by a cooling tube 93 mm. in diameter, containing cold water. In shape and size it very much resembles a large rifle. The mechanical details are simple and of strong construction, so that it can be easily and rapidly mounted, or dismounted, without the aid of special instruments. The breechblock, with all its working parts, is very simply made of six strong pieces, thus doing away with any complicated mechanisms—so much so that an unskilled person may readily dismount it.

"Repairs are easily made and all parts can be immediately replaced, a feature not possessed by the Maxim.

"The caliber of this gun is the same as that of our rifle, so it has the great advantage of using the same cartridge.

"The present weight of the Perino is 27 kilograms, but in future models this will be reduced by 3 to 4 kilograms by using steel-bronze in several parts. The tripod is provisional and its design is excellent, but in its present form it weighs too much. A reduction in weight to 20 kilograms is not too much to expect. It could hardly be made lighter than this without sacrificing the stability of the machine while firing.

"The fire is continuous, every operation that insures this continuity (extraction, loading, firing, etc.), being automatic; all that is necessary is a pressure on the trigger. It may be fired intermittently, however, shot by shot, by successive pressures on the trigger. Continuous fire is effected by means of clips, or a magazine containing 25 cartridges. The clip is metallic, rigid,

and rectangular in shape. The hopper, which is placed on the left side of the breech, is also of metal and holds 10 clips (a total of 250 cartridges) which are automatically loaded into the gun. The hopper can be filled by hand with great facility. The clip is superior to a ribbon in that it is more easily filled when empty.

"The greatest rapidity of fire—obtained, it is true, by a fully trained detachment—has been 500 shots per minute; the average, 425 shots per minute. A well-trained detachment would be able to exceed this latter rate. The barrel is cooled by the injection of a stream of water from a large syringe, an operation that can be carried on while the gun is being fired. The steam escapes by a small pipe fastened underneath the gun on the forward part. It was observed in the Russo-Japanese war that the steam, escaping in little white clouds, disclosed the positions of the machine-guns. Perino has obviated this difficulty by providing a tube that carries the steam to the ground, where it is condensed by the herbage.

"This gun has the same range as the small arm, 2000 yards. Its accuracy, although influenced largely by the stability of the tripod and its weight, is excellent at all ranges and its dispersion very slight. The sight is very simple and strong and allows the gun to be fired with a sweeping motion in the horizontal plane; with varying elevations for range; or the two combined.

* * * * * * *

"Furthermore, the opinion was expressed that all Alpine battalions and infantry and cavalry regiments should be supplied, in time of war, with a sufficient number of machine-guns (this to be at least 4 per regiment and a section of 2 for each Alpine battalion); and, in order that the personnel may be instructed without delay in the use of the new arm, under all conditions of war, there be issued to each of the above designated corps a Perino machine-gun with a supply of ammunition.

* * * * * * *

"The armament in time of peace would then be as follows:

FOR CAVALRY REGIMENT.

One gun (carried on a horse led by a mounted man).

A supply of ammunition (carried on a horse led by a mounted man).

Three mounted men.

Total, 7 horses, 5 men (not including the chief of detachment)."

CAVALRY AND THE AEROPLANE.

An article under the above title appeared in the July, 1909, number of the Journal of the U. S. Infantry Association.

Regarding it the Journal of the Military Service Institution (September-October number) comments editorially as follows:

"We note that the contents of this number (July, 1909) relate very properly to things that especially concern the foot-soldier with the exception of one paper, which, if it deserves serious consideration, has apparently strayed from the cavalry corral. Airships will be useful in war. Cavalry will continue to be indispensable to a successful campaign in the future as it has in the past."

Not only did we think that this article did not deserve serious consideration, but also it appeared that there was an undertone of sarcasm in it that should, for other reasons than the one given by the Editor of the Journal of the Military Service Institution, have barred it from the pages of a journal of another branch of the service. "*Harmony*" is the strength of all armies, but more especially of ours.

THE CAVALRY JOURNAL AS A BI-MONTHLY.

A former editor of the Cavalry Journal and a distinguished member of the Cavalry Association writes regarding the change of the Journal to a bi-monthly publication as follows:

"I am very much afraid that a mistake has been made in establishing the Journal on a bi-monthly basis. I, at one time,

when *suitable* articles were not on hand, only by the greatest personal efforts saved it from going out of existence.

"To increase the number of the Journals from four to six per year, and to fill them with school essays, however good, will bring us no credit. You must have original articles and translations of good foreign articles, or go back to a quarterly. This would be a serious step, and as editor you would have to share the blame with the Council.

"Unless you have a supply of manuscripts sufficient to last two years from which to cull, you had better reconsider the bi-monthly proposition before it is too late. There is really no demand for a bi-monthly."

As the September number of the Journal had been issued before this letter had been received and the change from a quarterly to a bi-monthly had actually gone into effect, it was too late to reconsider the question. However correct the above quoted ideas may be, and there is no doubt that it will require strenuous work to procure sufficient good, original articles for a bi-monthly publication, yet there has been very frequently during the last two years a call for the Journal to be so published and, in several instances, a monthly issue has been advocated.

Many of those who have advanced the idea of more frequent publication of the Journal stated that they would much prefer to receive it oftener, even if the same number of pages or the same amount of printed matter was printed each year.

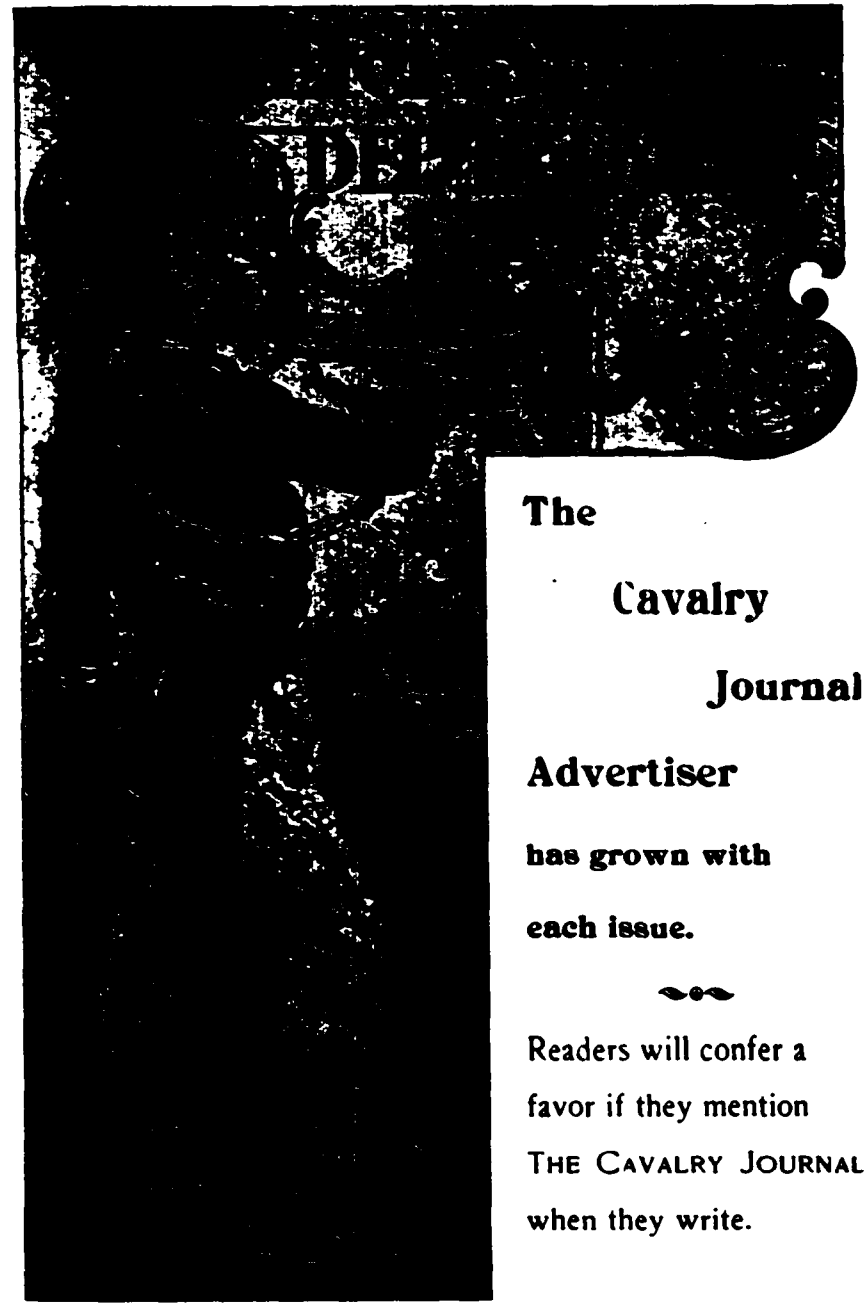
The Executive Council have great hopes that the newly created "Sub-council" or regimental representatives will be able to stir up more enthusiasm among our members and induce them to contribute original articles more freely.

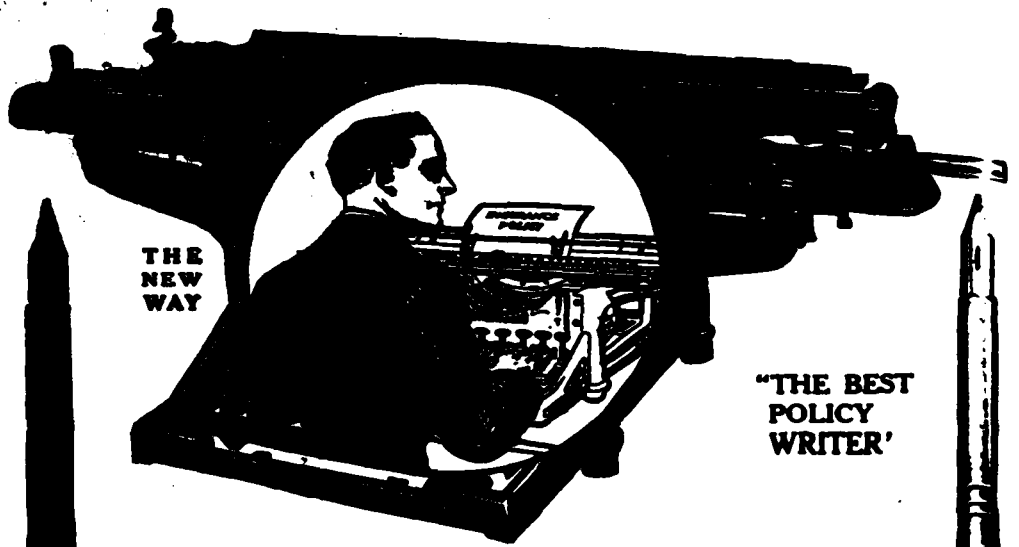
As to translations from foreign publications, the stock of these is almost unlimited, as the Second Section of the General Staff very kindly furnishes us with copies of all translations, on cavalry subjects, made for them, and in addition many others are made at the Army Service Schools which are available for our use.

However, as stated above, we will need the active co-operation of our members to make this change a success, and it is

hoped that they will not only supply us with original articles on cavalry topics, but also to give us, in any form, material for "Military Notes," which many of our members consider the most interesting and valuable feature of the Journal.

EDITOR.





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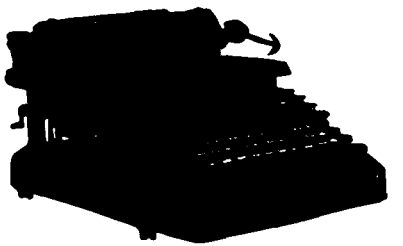

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