VOL. I. MARCH, 1888. NO. 1.

JOURNAL

OF THE

United States Cavalry

ASSOCIATION.

LEAVENWORTH, KAN.:
STEAM PRESS OF KETCHESON & REEVES,
1888.

JOURNAL

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SOME GERMAN IDEAS ON CAVALRY GATHERED FROM "CONVERSATIONS ON CAVALRY." PRINCE KRAFT DE HOHENLOHE-INGELFINGEN.

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THE author of "Conversations on Cavalry," Prince KRAFT DE HOHENLOHE-INGELFINGEN, General of Infantry and aide de camp on the staff of the Emperor of Germany, had previously published, among other works, "Letters on Cavalry," in which he had warmly praised the mounted arm for its services in the Franco-Prussian war.

These "Letters" gave rise to a number of conversations between himself and a cavalry officer, whom he describes as "of the highest rank, and of the greatest experience, both in war and in the instruction of troops in time of peace."

These conversations the author has faithfully recorded, with the dates on which they occurred, extending from November 1885 to June 1886.

Although the form is that of a discussion, the author does not combat any of the propositions of his cavalry friend, and the conversation may be taken as an exposition of the ideas of the latter. The style of this work, of some four hundred pages, is necessarily prolix, and, while we may regret to find the material in such a shape, we must take it as an evidence of the intense interest in the preparation for war, that such a

work should not only be brought out but should find immediate translation into French — for it is from the French version that I make my notes.

The cavalryman, while heartily thanking the Prince for having undertaken the defence of the mounted arm against the attacks that have latterly been made upon it, thinks that his praise has been too generously bestowed, and assures him that this opinion is shared, generally, by the experienced officers of the arm.

"You have represented us as realizing the ideal," he says, "while we feel, even in reading your writings, how little we made of our opportunities and how vast is the room for improvement."

"You consider praise, properly bestowed, as more likely to stimulate improvement than would hostile criticism, which more often provokes useless discussion and resistance; but your dominant idea is, that our cavalry was employed according to the rules in '70 and '71; that, generally, it was well led and behaved handsomely; that its services were highly satisfactory."

"True, the Uhlan was the terror of all France, but, as the French cavalry was still more badly handled than our own, this is saying little."

"How often our cavalry disappointed our expectations. A SEYDLITZ would have given a better account of them. Such a genius cannot, indeed, be made to order, but the system of education should result in forming chiefs capable of properly handling masses, capable of doing great deeds with them; and it should result in forming these chiefs from men only fairly gifted, if they are but vigorous, active, brave and chivalrous."

"Our cavalry is animated by the best spirit, its officers yield nothing in zeal and devotion to those of FREDERICK THE GREAT; its horses are even better; but what is the use of all this, if the horses are not trained and handled in a rational manner."

"Our horses are tough and capable of extraordinary service when rationally handled. For example:—

"A brigade marched one day from Beauvais to Gisors, took part in the capture of that place and returned to Beauvais in the afternoon, 38 miles; the next day it moved to Gournay and back, 31 miles; the fourth day it moved to Bretevil, where some squadrons made several charges, and it then returned to Beauvais in the afternoon, 38 miles."

"But how seldom we dared to demand such efforts. How many times we lost contact with the enemy. Why was he allowed to fall back upon Paris? Why did not swarms from our mass of cavalry envelope him and cut the railways in his rear? Why did we not scout thoroughly during the winter?"

"Had our leaders felt capable of covering 30 to 60 miles a day with

sufficient masses, could the armies that were to deliver Paris have sprung from the earth and been upon us before we suspected their existence?"

"Icy roads! We have them at home, why have we not learned to move upon them? SEYDLITZ himself would have been helpless with cavalry horses that could not move on ice."

"A few brigades who had learned this accomplishment did, however, scout on the ice and the others might have done as much."

This is indeed a sharp arraignment and the Prince falls back upon *those magnificent charges*: those charges that overthrew the time-honored principle, "That in nine out of ten charges of cavalry against cavalry one side or the other wheels about before the shock." He reminds his friend that in '70 the opposing cavalries almost invariably penetrated each other and fought hand to hand in the melee. Here, however, is the very point that the cavalryman makes in proof of the inferiority of the cavalry of '70 to that of FREDERICK.

"FREDERICK charged in compact order; there could be no penetration, simply a shock. He formally discouraged loose attacks, because they led to the 'melee,' and he added 'I want no melees, the cavalry should charge in a wall.' The result of this was that the side that saw it was going to have the worst of it could do no better than to dodge the blow."

The inability to keep this compact order is attributed to insufficient training of the horses and men.

"At Vionville great masses of cavalry were frittered away, regiment by regiment, without plan and without unity. There was no one who commanded the cavalry as a whole."

They had few chiefs who dared to assume the responsibility of leading large masses of cavalry in order against the enemy; but, for this, it is the system and not the individual that is to blame.

"The SEYDLITZES, ZIETHENS and DRIESENS did not come into the world generals of cavalry; they are the expressions of their time, of the mode of instruction of that time."

"As to DRIESEN.—Did not FREDERICK exclaim, in surprise at his exploit at Leuthen, 'What! that imbecile DRIESEN?' and yet the monarch was a good judge of character."

"A genius and an ordinary man are therefore both capable of obtaining great results, their exploits are the results of the principles of their education."

"The principles of FREDERICK are still followed, in theory, but not in practice; in the manner of using cavalry, but not in the means by which the atom (the trooper) is fitted for aggregation to the mass."

"MURAT'S cavalry were certainly not drilled individually, but MURAT did not lead his men on FREDERICK'S principles."

"He formed broad, deep columns and put these masses in motion toward the point of attack. Not a trooper, had he wished it, could have given his horse another direction."

"Again, MURAT charged at a trot so as to keep his men together."

"And what did this herd of horses effect? It went through several Russian batteries and then struck several regiments of the allies, which, although much inferior in numbers, were not long in driving it back quite as fast as it had come."

"MARWITZ, with untrained and bolting horses, was successful at Habelsburg; but a cavalry that dissolves at the first charge and cannot be formed again afterwards, is of no great value, and, in fact, Colonel BISMARCK did not dare to have it charge the second time. 'I can turn them loose when I choose,' he said, 'but as for seeing a single one of them afterwards, that's another question; I won't answer for that.'"

He goes on to cite a case where in '70 a squadron of his own "melted" into a squadron of the enemy in a charge; the melee turned into a mad stampede of friends and foes; sounding the rally had no effect, and the herd was rounded up only by the sabres of the enemy's reserves.

"With a bolting cavalry it is mere chance as to the direction in which it bolts; as to whether it is victorious or beaten."

"At the manœuvres he saw another illustration of this—'six regiments of cavalry repulsed were to be supported by a division of equal force, but the retreating division bolted and, sweeping down upon its support, stampeded the whole, in a mad flight."

"In war these two divisions would have been accused of cowardice. Any cavalry, not master of its horses, is thus exposed, however brave it be."

Again, he saw a column of squadrons brought to a walk, from the the trot, to insure a safe execution of "column left."

"From October 1st to May 1st the horses are ridden in riding halls and level exercising yards."

"Then follows the school of the squadron and of the regiment on level drill grounds. It is only during the four weeks of the annual manœuvres that the cavalry has, from time to time, an opportunity to manœuvre on a natural surface."

"The trooper is then busy with each stone, each furrow that he sees: he has no eyes for the enemy, no thoughts of touch and alignment, no confidence in his seat, still less in his mount."

"Now, a chief trained in such a school cannot think of leading his division against the enemy in compact order, if he knows that the first potato patch, the slightest change in direction, will threaten the order of his command."

"He prefers rather to send his men against the enemy by squadrons, by regiments, still keeping some of his force in hand, than to lose the whole, in several lines, across country."

It seems that about October 1st each year the squadrons receive their annual contingent of recruits and young horses, the squadron is then divided up into a number of riding classes and is not formed or drilled as a squadron until late in the spring.

The work of these riding classes is inspected at fixed intervals and the exercises to be required at each inspection are strictly laid down.

The abuses of this system of instruction are said to be at the root of the evil.

"The means has been allowed to crowd the end out of sight; school riding and exhibitions more suited to the circus ring than to the drill halls have been allowed to crowd out everything practical, until the horses come forth in the spring ruined, crammed, not trained, and ready to bolt when once more in the fresh air."

The remedies suggested are, squadron drill during the winter, route marches, individual working of horses in the open air, (using the riding halls only for recruits and young horses, except in bad weather,) constant supervision of the work instead of inspection at fixed times, and, in the school of the squadron and large bodies, a constant eye to the requirements of actual war.

The squadron is the unit: five squadrons to the regiment, two regiments to the brigade and three brigades to the cavalry division.

The squadron has three platoons and is formed in double rank.

Its personnel is one captain, three lieutenants and 133 enlisted.

In computing its strength for squadron drill in winter, we find the following data:—3 troopers (on an average) on duty away from the regiment; 4 orderlies for the officers; 2 sick; 5 on guard, in kitchen, &c.; 39 recruits; 56 men remaining for drill; 4 trumpeters; 15 non-commissioned officers, and last but not least, 135 horses, of which number, 26 are young horses, not in ranks.

It is urged that, though 56 men in rank are not enough for the normal squadron formation of three platoons in double rank, yet they are ample for two double rank platoons or for four in single rank.

Eleven files front is taken as the smallest admissible in double rank, as a smaller front than that would give the platoon a greater depth than width.

The following table will give some idea of the way in which the mount of the squadron is divided into classes for riding. It contains, however, some suggested modifications as to classification.

1st Class.—Consisting of 13 young horses (current year) with the best horsemen in charge of their training.

2nd Class. — Thirteen young horses (previous year) with the remainder of good horsemen.

3rd Class.— Thirteen horses belonging to riders of first class.

4th Class.—Thirteen horses belonging to riders of second class.

5th, 6th and 7th Classes.— Recruits on picked horses from contingents 5 to 9 years back. (Thirteen horses each class.)

8th Class.— Backward recruits of last year on horses, chosen as before. (Thirteen horses.)

9th and 10th Classes.— Old men on old horses. (Twelve horses in each class.)

11th Class.— Men riding every other day, (artificers, &c.,) on horses to be condemned next inspection. (Thirteen horses.)

We find that the squadron receives yearly, 34 recruits and 13 young horses (3 years old,) and that the recruit is not counted as in ranks for some nine months, while the horse is counted out for at least a year and a half. Ten thousand horses being required annually for remount.

We see, that the young horse is carefully trained by experienced horsemen, who still ride their own trained horses daily to keep their hands in.

That the recruit learns to ride upon the best horses, so that, while the horse is trained by the best horsemen, he in turn becomes the trainer of riders. As in the question of egg and chicken, it is useless to inquire on which side the reciprocal indebtedness began.

"The cavalry of the ancients were mercenaries drawn from nations of horsemen, but the unreliability of such troops suggested the thought of training up cavalry at home. This is the origin of cavalry schools which are properly but a means to an end."

The German system of inspection of progress of classes at fixed periods, is seriously objected to, as tending to foster rehearsals and showy performances at the expense of solid education.

The following ideas as to the riding school are of interest:—

"Instruction in classes is a necessity imposed by the scarcity of instructors; but this instruction should contain no more of the simultaneous element of drill than is absolutely necessary, and as much individual teaching as possible. Time and trouble will be saved by exercising the horses under trained riders before the recruits mount."

"Instruction should begin on the pad with arrangements for attaching stirrups. These latter should, however, not be used too early. When stirrups are issued, it should not be to the whole squad but to each man as his progress requires them."

TRAINING HORSES.

"A dead load in the saddle is found to tire the horse more than a rider of three times the weight. Young horses feel a load more when at the halt than when in motion."

"When the horse breaks from the trot do not check his speed but bring him down with bit and leg."

"The saddle horse must be trained to carry back his natural centre of gravity to the centre of gravity of the rider."

"A rapid method of training a horse to a collected action (with his hind quarters well under him), is to round the corners of the hall, with the hind quarters thrown well away from the wall (towards the centre of the circle described)."

"The gallop should always cover more ground than the trot, otherwise the trot is sufficient."

"Distances, in the hall, are not to be gained or lost by change of gait but by rounding the corners more or less exactly."

"If your horse offers an unexpected resistance to-day, you must have made a mistake yesterday."

As an instance of the unreasoning severity once in fashion, an instructor is quoted as follows:

"Two good digs of the spur throughout the squad!" "Two more, good ones!" "And now, two more to please me!"

"Much of the fancy riding of the schools has come down to us from the 'Charge in Dispersed Order,' which up to 1740 was one of the regular forms. Each horseman used to caracole before the front of the enemy discharging his bullets, and avoiding the shots of his adversary by means of pirouettes and all kinds of artistic manoeuvres, the relics of the middle ages."

"The old time horse was coarse and sluggish; he could stand flesh, but the animal of to-day, with more or less blood in him, requires daily much fresh air and exercise to keep him in condition."

"Epizootic can be not only treated but prevented by fresh air, and the less a horse is in his stable the purer will the stable be when he is there."

"Periods of two or three weeks are taken up, several times a year, to rest and fatten up the horse after some unusual exertion, such as the manoeuvres, etc., but, if the animal were never allowed to get fat and sluggish, there would be no need of such rests."

"The best oats the German cavalry ever had were what they got in France when freed from the evils of the contract to lowest bidder."

MOUNTED GYMNASTICS

are highly recommended, and it is suggested that the instructor place his hands on the leg or wrist to assure himself that it is motionless during exercises of the opposite member.

"Some recruits require time to develop the proper fork, so that the buttocks may find the bottom of the saddle. If the rider does not envelop his horse properly, he seeks to secure his position by main force, carries his buttocks back, his legs forward, and hangs on the rein."

"The reins are usually given too soon; the horse is worried and the recruit spoiled. The seat should be thoroughly secured before the reins are lifted from the horse's neck. This may be done with the horse on the longe or led by another mounted man."

"We sometimes hear it said, 'He has no seat, but a good hand.' Pure nonsense! Without a correct, sure and free seat, he cannot ride his horse well, and he who does manage his horse properly must necessarily have a good seat. The reverse, however, is not true: the seat is but the first step and does not imply good riding."

"Again, a trooper may ride boldly, he is not to be unseated but he cannot manage his horse; while another has a correct seat, is supple; his limbs act independently of each other, with precision, and under control, but he has not the necessary strength of leg to keep his saddle at an unexpected movement of his mount."

"Never close the leg more than a hand's breadth behind the girths: never, on the flanks where the spur is to be used for another purpose and where pressure might beget the habit of kicking at the boot."

The whip is considered a most useful auxiliary and should be short and rigid, so that a touch can be given at the exact point where it is required, and without tickling the horse.

"'Avoid short reins.'—A horse fumbles and balks at a leap, the colonel cries, 'halt!' 'drop reins!' 'close legs!'—then, when all this is done he shouts 'forward.' The horse shoots off like an arrow and clears the ditch. Saddle galls in front on the left and in rear on the right betray a short rein."

"The martingale is of no use, except for flat racing.

1st.—It gives a false carriage to the head, and the horse is far more likely to resist its action than to yield to it.

2nd.—If short enough to have any effect, it hampers the horse in his movements, especially in leaping, and it brings him down if he stumbles.

3rd.—It deprives the reins of their lateral action.

4th.—It weights the forehead with extra harness.

5th.—Its rational use requires two hands and it is therefor unsuited to cavalry.

6th.—It requires more time in bridling and makes it difficult to lead the horse."

The author saw more martingales among the officers of one regiment of infantry than in a brigade of 1400 cavalry.

"An easy and firm seat is the solution of many a problem for which the inexperienced rider seeks a special harness."

"Bits should be easy and carefully adjusted to the mouth."

Nose bands or bridles are recommended as preventing the horse from fully opening his jaws, and escaping the action of the bit by passing his tongue over it and out of the mouth.

"A horse with the bit under the tongue will pull as though working up to the bit, when in reality, he is dragging behind it and is not in hand."

THE INFLUENCE OF SPORT.

"Reluctant though he may be to admit it, the cavalryman is deeply indebted to the civilian for improvement in horses, and, perhaps, also in riding. To go a step further, he is under obligation to the civilian of England; for, the impulse of improvement was given by the importation, about 1843, of racing, steeple chasing and fox hunting."

"Unfortunately the army officers of high rank did not take advantage of the awakening interest in sport and allowed light headed young victems of anglomania to become the exponents of the new ideas."

"English slang, conventional dress and saddlery and a grotesquely exaggerated jockey seat, were received as the essence of English sport."

"An intelligent rider, 'we were told,' considers his horse only as a means of locomotion, to transport him rapidly from point to point—in what manner is of no importance, &c. &c." The air was full of such wise saws. "Naturally the reaction set in, the anglomaniac was an object of persecution; arrest was a common punishment for riding the English trot."

"Gradually, however, it was realized that English sporting notions had been misrepresented; and, an intelligent interest having been awakened, the anglomaniac withdrew into obscurity before the strong light thrown on the sport he had caricatured."

"In 1861 the English trot was officially sanctioned by PRINCE FREDERICK CHARLES; and it may be inferred that there is no danger of a return of hostility to sport when we read, that, in the autumn of '86, two generals of cavalry followed a hunt on bare backed horses."

"If the generals of 1853 had been still as young and active as they were in 1815, when they had held nearly the same rank, they would, themselves, have taken the lead in the sporting movement; they would

have directed it, and they would have obtained a warlike cavalry; as, also, they would, by their personal presence, have prevented the abuses mentioned."

"It is a well known fact that the taste for riding is lost between 40 and 50; having arrived at this age officers confine themselves to the strict necessities of the service. Now, the strict requirements are not sufficient to keep up practice in riding; the 'go' is lost, the warrior spirit disappears; and, when war breaks out, when riding must be done, it is a fatigue, it is the cause of many sufferings that destroy all pleasure in warfare."

"Neither FREDERICK nor NAPOLEON were accomplished horsemen, they knew what could be required of cavalry and they had other things to occupy them, but the better an officer rides and drills the more agreeable will the service be to him."

"If he knows only the monotony of routine, the grind of a stupefying service that has in view only the great day of inspection, he cannot have a passion for his profession, he will become skeptical, blase, and will prefer the charms of an elegant boudoir to those of his saddle."

Hunting and paper chasing are strongly recommended as developing the style of riding required for cavalry.

"Steeple chasing and racing have greatly improved the breed of horses and the methods of training; but, as speed enters too largely into races, such sports should be encouraged among the non-commissioned officers, only when they can be supervised by an officer with a firm hand, and the course and conditions should be such as to develop military riding."

"The great difference between the steeple chaser and the charger arises from the fact that the rider of the former leaves full liberty to the daring power of the hind quarters, supports the head firmly with both hands, and is careful not to hamper the pace."

"The charger on the contrary should never bear hard on the bit, as he is ridden with but a single hand; and he must be able to stop and turn short instantly, his hind quarters being always sufficiently gathered under him."

"He must be accustomed to keep himself poised and collected with but slight support of the bit; for, in heavy column, in line, amid dust and powder smoke he cannot choose his footing, nor can his rider, who is otherwise occupied, give a thought to the matter."

"The charger must be trained to leap high and far, often unexpectedly, without a rush, and without losing the equilibrium of his movements. Last but not least his gait is that of the slowest horse in the line."

"Again, a good steeple chaser may run away in every race; provided he answers the indications of direction, the jockey cares little what happens after the finish. The jockey may kill his horse to win, the trooper must save his mount."

"When a steeple chaser refuses a jump, they say, 'he don't feel like it to-day, he must have slept badly.' The charger must always obey."

"The position of a good English jockey — not that of the anglomaniàc — does not differ, as far as the thighs are concerned, from that of every good rider: but it is much more difficult to observe, because of the strain on the hands, and because the upper body must be carried forward to relieve the hind-hand and allow it to act only on the speed. The fore-hand giving the support."

"A good rider may carry his legs forward for relief, as long as he does not need them, but the thighs and buttocks always preserve the correct position, and, as he approaches an obstacle, the legs return to place, and the centre of gravity of the horse is brought back farther under that of the rider."

"If the military rider adopts, at quick gaits, the position of the jockey, he must not be surprised to see his horse lose his habitual carriage and seek support in the hand."

PRACTICAL EXERCISES.

To take the place of excessive school-riding in winter, marches on icy roads are suggested. "The hackmen and mail-rider are not stopped by the cold, and the Cavalry should learn to take care of themselves in the worst weather." The German Cavalry are now supplied with ice nails which are quickly adjusted and removed, but the men require practice in the use of them. The regulations prohibit squadron drill when the thermometer falls below 55 degrees Fahrenheit.

Swimming horses, fording, reconnoissance and forced marches are suggested as matters which might occupy the cavalry while the squadron is reduced by the absence of the recruits and instructors, as well as at other times.

We find some interesting points in the passage of fords by heavy columns on the field of battle.

"If the column crosses in a straight line, the water is dammed up; the line then becomes concave and finally breaks in the middle. By making the line convex this effect can only be delayed."

"The head of each platoon should turn obliquely up stream, as it enters the water, and should regulate on the head of the preceding platoon, while the rear should incline down stream. This leaves a passage for the water between platoons, while preserving the formation of the column."

The column of platoons would, it may be observed, give the same free

passage, but the dress of the platoons would be harder to preserve in the water than the form of the oblique columns suggested.

"The value of reconnoissance is emphasized by the number of instances in which, in '70 and '71, Cavalry made long detours and lost hours on the battle-field through failure to reconnoitre fords and slashings in their immediate front."

FORCED MARCHES.

"Forced marches should not be carried to extremes without previous careful training. Loss of flesh does no harm, but, when the legs and feet give out, the limit of usefulness has been passed."

"In marches on instruction the constant passage from column of sixes to threes and twos and back again, is a waste of time and strength, which could be better employed in long trots. The front into line, however, is legitimate in these circumstances, as the command cannot be too well prepared to take the charging order."

"Long rapid marches, with passage of defiles preceding the arrival on the charging ground, are most useful exercises in view of the long range of modern fire, and of the immense distance between the reserve, where the cavalry will be posted, and the first line, where it will be ordered for the charge when the general in command sees the moment for its employment approaching."

"I have been present," says this Cavalry Chief, "at five great battles amid masses of cavalry; every time it was, or would have been, necessary to cover great distances and to pass defiles before being in position to take the charging gallop."

"Masses of cavalry should be exercised not only in forced marches up to 30 miles per day but also in covering a mile or two rapidly (without arriving out of wind) and passing quickly from column to order of combat."

"Inspectors too seldom concern themselves with marches. They find it more convenient to take up a position on an eminence and enjoy a series of varied and lively tableaux, a succession of rapidly succeeding charges, than to accompany a cavalry column for an hour at a slow trot."

"He ridicules the manœuvres on known ground against an imaginary adversary, whose actions are limited beforehand."

He would have the inspector look,

1st.—To discipline on the march.

2nd.—To regularity of gait at the steady collected trot.

3rd.—To condition of the horses.

4th.—To crossing of obstacles (quite a different matter on the march from leaping on the track).

5th.—To the passage of a defile with 24 squadrons.

Describing General WRANGEL as a type of a thorough inspector, this officer says: "We saw him approach, a little dried up old man, without stirrups, as though soldered to his horse, with his severe face criticising everything with biting, caustic remarks. Every one of his expressions was an epigram, a fact, which made his reproaches carry farther. He was no respecter of persons. When he saw something to blame he did not care who was hit. Previous service, family, age, were nothing to him. It was said that he had a stone for a heart. When some one did not appear to him to be sufficiently supple on horseback, he expressed his regret that he should not see him again, and he obtained his retirement from active service. He was very lavish of arrests."

DRILL OF THE SQUADRON.

"During the period when the squadron is incomplete it should be drilled twice a week, and should have a march of instruction weekly."

"The squadron drill proper should be short and sharp—say half an hour—to be followed by individual work."

"FREDERICK THE GREAT said: 'If the trooper passes a day without *working* his horse, it is a day lost.' This *working* meant *individual work*. It consisted, in learning to move in any direction, at any gait, at will; in crossing broken ground and obstacles at full gallop, without deranging the seat; and in using the arms."

"The type of FREDERICK'S charges has been lost because our modern riders are too little drilled in the style of riding required, and in practical manœuvres."

"The origin of the aversion to individual working of horses and to dispersion as foragers, lies in the bad riding of the men, who get out of hand when anything outside of the regular routine is demanded."

"Individual working and instruction are now, more than ever, important, since we have no longer, those pillars of the service, the old sergeants: our non-commissioned officers finding good positions in civil life."

"The inspector can ascertain the proficiency of the squadron in individual work, by sending men out of ranks on particular errands, requiring full mastery of their mounts."

"Too much stress should not be laid on precision and detail in such movements as passing from column of sixes to threes, and in the many small movements of that class; this precision is a relic of time consuming and useless movements, borrowed from the Infantry in 1812; it hampers motion and speed."

The changes due to the Franco-Prussian war are:

1st.—Attention to scouting.

2nd.—Fixed, but elastic, rules for handling large masses.

3rd.—Greater mobility of masses, through the introduction of the

line of columns: through the adoption of central direction in platoon and squadron, and through the rejection of all inversions and of all evolutions, without tactical object.

4th.—Increased importance attached to individual instruction and training.

5th.—The issue of a fire arm of long range and the thorough instruction of each trooper in marksmanship.

"The French were admittedly superior to us in '70 in the use of their arms, and that is a point not to be neglected, for without proficiency there, the best cavalry is but food for powder."

"Avoid anything like a menu in drill: let everything be the outcome of place and moment."

"Fighting on foot is only an expedient to be employed when the Infantry has not yet come up."

"The sabre and lance are the arms upon which Cavalry must rely to realize its especial functions. Its evolutions must all have in view the attack."

THE RALLY.

"To know how to rally rapidly is one of the most essential requirements for Cavalry."

"There must be a reserve with which to give the last decisive blow, but this reserve must finally be employed, and the squadrons first engaged must, by that time, have rallied and be themselves available in its place."

"FREDERIC made this rally a great point, and he prescribed that after every charge in compact order 'the command disperse should be given,' but he adds, 'not that it is the intention to do this in the presence of the enemy; you must tell the men that it is to exercise them in rallying. The dogs will always disperse in spite of you after the shock.'"

Many examples are cited of the value of the faculty of dispersing and rallying rapidly, notably where marshy and wooded ground was passed by dispersing and, by prompt rallying on the other side, a charge in line was delivered from a quarter whence a charge had been deemed impossible.

"The rally should be used whenever a class, a platoon or a squadron is assembled, either on foot or mounted; each man learning to find his particular place in the particular formation for which he knows the rally is sounded. It is only by constant practice and by constantly varying the circumstances and the formation that the squadron can be rallied, at the first signal, without collision of horses and without injury to the riders."

"Cavalry should always be reinforced and supported by sending up the reinforcements, never by falling back upon the supporting troops. This latter method is borrowed from the infantry and is totally at variance with the spirit and requirements of mounted service."

CENTRAL DIRECTION.

The captain, in front of the centre of the squadron, is always the guide, according to the German regulation, but this provision is considered faulty for the charge, as the slightest inaccuracy in direction will produce breaks, and as the gaps formed by the fire of the enemy will not be promptly closed.

It is urged that in the regiment, and even in the brigade in line, the guide should be the centre of the whole line; guide right in squadrons of the left wing, guide left in those of the right wing. They are reluctant, however, to weaken the principle that makes the squadron commander, practically, as well as theoretically, the leader of his men. The captain should remain the guide until the command "To the charge," which should be the signal for "guide centre" for the whole line.

Guide right, for squadrons of the left wing, means that each squadron would regulate on the chief of its right platoon.

A neat expedient is mentioned by which a colonel obtained cohesion in the charge, with Cavalry on whose training he could place no confidence. With four squadrons in line, he wheeled the first, "half left," the fourth, "half right," just before the command charge, so as to produce such a packing that not a trooper could wheel off, and so that at the moment, anticipated, when his command would bolt, it should bolt towards the enemy.

THE CHARGING GAIT.

"The men and horses must not be allowed to regard the charge as anything unusual, as any cause for excitement; horse and rider must be as cool at the charging gallop as at the walk. The more practice we have at quick gaits the more we can count upon cohesion in the charge. Long gallops must be required if the cavalry is to find its true element on the enemy's flanks."

To regulate the gaits, the German regulations recommends drill in single rank, with intervals of one horse length between files; and, afterwards, a similar double rank formation, with one or two horse lengths between the ranks. This formation obliges the trooper to ride his horse independently, and he can be held individually responsible for the result, not being dragged along by the mass.

"Preparatory to this open order drill, the instructor should take up a position, and have his men gallop around him in a swarm, on a large circle."

"In such a shape they will not torment their horses about dress and intervals, and the instructor can easily correct faults in individual riding. This experience is especially useful in broken ground with plenty of obstacles."

It is interesting to find, in this connection, the recommendation, that provision be made for an open order formation similar to our own mounted skirmish line — one in which the men are in hand and capable of manœuvreing. The Germans seem to have nothing of the kind.

A *hunting gallop* is recommended for the charge, but the charging gallop and the command "charge," just before the moment of the shock, cannot be given up; if only because of the moral effect they produce in one way or another.

"In charging infantry or artillery the charging gallop is not indispensable, but it is imperative against cavalry."

"Against cavalry, keep the trot a long time, take up the gallop only when quite near the enemy to get the horses in wind, and command 'charge,' a little before the shock."

"The trooper should look straight to the front, without turning his head to watch the alignment."

"The 'boot to boot' is taken only for the charge, at other times there should be more room in ranks."

"The effect of a charge should be judged from the front, where an idea can be obtained of the shock and cohesion; in judging from one wing these points are missed and direction is the only point considered."

"FREDERIC inspected his cavalry in the field, not on the drill ground; he took his stand where he pleased, and required the cavalry to charge upon him in compact lines without being thrown into disorder by the ground."

"A chief who can lead his troops against the enemy over all kinds of ground will consider, as perfectly natural, strokes of daring which, to another, would appear to court disaster."

"The leader educated in such a school knows, when he comes to high command, what can be required of his men. It is thus that we can form leaders, not, indeed, such as SEYDLITZ, ZIETHEN and BLUCHER; these were geniuses, which the system did nothing but complete, but we can form men like DRIESSEN and the rest, and these men also did great deeds."

THE ORDER OF COMBAT.

"The order in which charges are to be made should not be fixed, but should be dependent on the object and the circumstances."

"FREDERIC's order for charging was, first, a compact line, boot to

N. B.—SEYDLITZ placed his recruits and uncertain men in the front rank with the veterans behind them, to keep an eye on them and urge them on if they did not charge squarely, by tickling them with their sabres.

He appears to have had an obstinate streak in him for, when ordered at Zorndorf to charge before he thought the proper time had arrived, he refused; and, when FREDERIC threatened him with the loss of his head, he replied, "That after the battle his head was at the disposal of his Sovereign, but that, during the action, he insisted on using it in the interest of the King."

boot; a few hundred paces behind the wings of this line, and extending beyond them, 5 to 10 squadrons of hussars, destined to fall upon the flanks and rear of the enemy with the sabre; next, came the second (or what we should call the third) line, destined to follow, directly, the first, and fill the gaps."

"If the second line is to produce the principal effect it should, of course, be the stronger."

"For instance, the first line can attack on the flanks and the second line straight to the front. This stratagem has often been successful at manœuvres. The action was as follows:"

"The enemy was charging the first line, which, having wheeled its platoons 'half right' was galloping off, and he was hoping to strike it in its flank movement; but the dust raised by the first line had masked the second, which had preserved its original direction. The first line then reformed by wheeling its platoons 'half left,' and the two lines enveloped the enemy so well, that there could be little doubt of the success of the manœuvre."

"The thinnest stratagem often succeeds in the excitement of battle. The mere fact of feeling capable of a premeditated ruse is, in itself, a superiority over an adversary who has not so much assurance."

"BLUCHER once feigned a retreat, and, having drawn the enemy upon his regiment of hussars he suddenly sounded 'front,' and 'charge!'"

HYMMEN had the two halves of his squadron retire in opposite directions, then sounded 'front,' and charged in flank two whole squadrons, which he overthrew."

To sum up the ideas of this General of Cavalry:

He would regard the riding hall and drill ground as a necessary evil;

He would regard the riding school as a means to an end;

He would improve bad drills and manœuvres by improving the individual rider and horse;

He would have practical instruction of every kind;

He would insure orderly charges by making them every day affairs for horses and men:

He would enlarge the field of usefulness of the rally, and increase the time devoted to it in drills;

He would have independence of set rules for battle order, and would make the leaders dashing and daring, by training them to regard as every day affairs, enterprises at which they would naturally hesitate.

Finally, we notice that the belief in "shock tactics of cavalry on the battle field proper" seems to be so generally professed, that the propriety of its employment in this manner is not even questioned in the whole discussion.

REMOUNTS.

BY CAPTAIN MOSES HARRIS, U. S. A.,

FIRST CAVALRY.

IN discussing the various wants and needs of the cavalry, it is believed that there is no subject of more vital importance than that of its remounts. Cavalry of the most perfect efficiency in points of discipline, instruction and armament becomes comparatively worthless, as cavalry, when poorly or indifferently mounted, and if through the agency of the Cavalry Association, our arm of the service is to be improved and benefited, it would seem that serious attention to this matter should not be delayed.

The artillery have a standing cause of complainf in that they are given no share in the work of devising and constructing the guns which it is their function to make use of, and yet their guns are provided by a corps of specialists educated for the purpose. Will it be conceded that horses are to the cavalry of less importance than guns to the artillery, and will cavalry officers acquiesce without a protest in the recent changes brought about by congressional legislation, whereby the inspection and selection of cavalry horses is delegated to the civilian employes of the Quartermaster's department?

It is not the object of this short paper to present any elaborate plan or scheme for supplying cavalry remounts, but to point out some of the defects of the present deplorable system, and to make such suggestions as may tend to a discussion of the subject, which it is hoped will eventuate in change and improvement.

A familiarity on the part of cavalry officers may be presumed with reference to the past methods of inspection employed by the Quartermaster's department in the purchase of horses. Until within the past two or three years a board of officers has generally been considered necessary, and while in the composition of the boards cavalry officers have been preferred, it has frequently happened that officers of other arms of the service have been employed on this duty.

The method of purchase by advertisement and contract failing to give satisfaction, in some military departments a few years ago a trial was given to open market purchase. Boards of officers were appointed from the organizations requiring horses and were permitted to go into the districts where horses could be procured and purchase such horses as were found acceptable: the only restriction being as to a certain average price for all of the horses purchased. This method gave great satisfaction to the cavalry, but was objected to by the Quartermaster's department, and having no warrant of law to sanction it, had necessarily to be abandoned.

Until 1884 the purchase of cavalry horses was provided for in the annual bill for the support of the army by an item appropriating a certain amount, leaving its disbursement subject to the general provisions of law. But in the act making provisions for the support of the army for the fiscal year ending June 30, 1885, we find it. "*Provided*, That hereafter all purchases of horses under appropriations for horses for the cavalry and artillery and for the Indian scouts shall be made by contract, after legal advertisement by the Quartermaster's department, under instructions of the Secretary of War, the horses to be inspected under the orders of the General Commanding the Army, and no horse shall be received and paid for until duly inspected."

In the appropriation bill for the following year no special provision relative to the inspection of the horses was inserted, but in the acts making appropriations for the support of the army for the fiscal years ending June 30, 1887, and June 30, 1888, it is *provided* "That no part of this appropriation shall be paid out for horses not purchased by contract, after competition duly invited by the Quartermaster's department *and an inspection by such department*, all under the direction and authority of the Secretary of War."

It is to be presumed that under the authority of this law it is within the power of the Secretary of War to order a supplementary inspection, by cavalry officers, of the horses purchased, but it is apparent that even he has not the power to dispense with the inspection by the Quartermaster's department which the law requires.

During the past two years the practice has been for the Quartermaster's department to make the required inspection by means of hired citizen experts—so called.

This is a reversion to the methods of the first days of the Rebellion, which filled the government corrals with thousands of worthless animals, which in many instances died before they could be sent to the front and which resulted finally in the establishment of the Cavalry Bureau, by which means the inspection of the horses was placed in the hands of cavalry officers. The improvement in the character of the remounts which immediately followed is a noteworthy fact in the history of the

civil war, and the establishment of this Bureau marks the point at which our cavalry began to attain that superiority which contributed so effectually to the successful termination of the struggle.

Paragraph 273, Army Regulations, states that the following specification will govern in the purchase of cavalry horses: "To be geldings of hardy colors, sound in all particulars, in good condition, well broken to the saddle, from fifteen to sixteen hands high, not less than five nor more than nine years old, *and suitable in every respect for the cavalry service.*"

If these specifications were in practice accurately observed by the citizen inspectors of the Quartermaster's department and the horses provided were in every respect suitable for the cavalry service, the law which prevents cavalry officers from having any voice in this important matter, upon which the efficiency and usefulness of their arm of the service depends, would still be objectionable as tending to destroy that sense of responsibility which is the stimulus which makes good and competent officers, and contributes to that *esprit de corps* the absence of which is a condition of stagnation and inefficiency.

Whether or not the horses purchased under the present system comply with the requirements of the regulations, and are in every respect suitable for the cavalry service is a question for cavalry officers to decide.

Within my experience those provided have not generally complied with the specifications. They have not been suitable for cavalry service, and have not compared favorably with those inspected by cavalry boards. On the contrary many of them have partaken largely of the characteristics of the Clydesdale, Percheron and Norman stallions—clumsy, logy, heavy limbed brutes calculated to break the heart and destroy the usefulness of any good cavalry soldier so unfortunate as to be obliged to ride them; while others of weedy growth, with their long legs and backs, appear to have been the refuse progeny of trotting stallions, bred to inferior mares. Both classes equally unfit for cavalry service and likely to be abandoned on the first march in which the powers of endurance of proper cavalry horses should be at all tried.

It will be said that the kind of horses most desirable for cavalry use are not largely bred and that they are difficult to find. Which is but an additional reason for careful and patient inspection by officers whose profession teaches them to know a cavalry horse when they see one.

It is in the nature of things that inspection by a board of officers, zealous only for the good of their corps, will be more carefully and efficiently made, than by a hired citizen, imperfectly informed as to the requirements of the service and open to many influences of a nature unknown to honorable and self-respecting officers. What cavalry officer is there, who, having been associated on boards of inspection with citizen experts, has not observed a disposition on the part of the expert to favor the contractor to the utmost extent consistent with the maintenance of his position, and harmonious relations with the members of the board?

The feeling that cavalry officers are unduly particular in making inspection, and that cavalry boards are obstructive to the rapid transaction of business has frequently found expression in the utterances of officers of the Quartermaster's department, and it is believed that their preference for inspection by their own methods is largely based upon the apparent diminution of labor and trouble in procuring horses. Only apparent, because horses unfitted for the service will not last, are an unprofitable investment, and must be much sooner replaced than those that are well selected and suitable.

In looking about for a remedy for evils, past and present, connected with cavalry remounts, it becomes apparent that the contract system is answerable for much of the trouble and dissatisfaction. That system when applied to the purchase of cavalry horses, becomes absurd and inapplicable. The specification "suitable in every respect for the cavalry service" conveys no information to the average bidder as to the kind of a horse wanted, and indeed it is well nigh impossible to specify all of the qualities required to make a perfect cavalry horse. The qualities required in a recruit can be as easily enumerated, and yet it would be absurd to expect to procure recruits by advertisement and contract as we do our horses.

From my observation as a member of inspecting boards at various times and places I have found the usual procedure in the case of purchases by contract to be about as follows: The contract having been awarded to the successful bidder at a figure which should procure horses of a fairly good quality, the contractor with the government looks about for one or more dealers to whom he sub-lets the contract securing for himself a handsome profit with little or no trouble. The sub-contractor sends out his agents and looks up small dealers to whom he agrees to pay a certain sum for each horse accepted by the board. A contract is frequently sub-let in this manner through three or more hands with the result that the first owners of the horses accepted by the board receive from twenty to forty dollars less for each animal than the contractor receives from the government.

Horses are readily classified according to their value, and horse owners will not present to the board of inspection horses valued at, say one hundred and forty dollars, which may have been the contract price, when they are to receive not more than one hundred dollars according to their agreement with the agents of the contractor.

It may be said that it is the duty of the inspectors to prevent this by refusing to accept horses of inferior quality, which may be granted. But when this course is pursued what is the result? After the board has

labored for a considerable period and has accepted perhaps not more than four or five horses out of each hundred presented, the contractor cries out that the inspectors are unduly severe, that such horses as they require are not to be procured. The Quartermaster becomes impatient, generally adopts the views of the contractor, and finally the board is dissolved or the obstructive members are relieved. Of course, this is not the invariable method; but it is certain that the contractor will always endeavor to put in low priced and inferior horses and that he will succeed unless prevented by the firmness of the inspectors.

There is but slight doubt that as long as this system of purchase is retained business can be conducted more smoothly, and with less trouble to the Quartermaster's department through the means of a citizen inspector than by a board of cavalry officers.

Inspection by citizen experts is an inseparable condition of the contract system of purchase, and both evils should stand or fall together. The efforts of cavalry officers to secure proper and suitable horses under this system must inevitably, in their contact with officers of the Quartermaster's department produce friction and irritation.

The remount question has been well treated in an article by Lieutenant S. C. ROBERTSON, 1st Cavalry, published in the *Journal of the Military Service Institution* for June, 1887, but the phase of the question which I have dwelt upon — the substitution of the citizen inspectors for Cavalry Boards in the purchase inspection, and the evils of the contract system, appear to have escaped the attention of this officer.

The defects pointed out by Lieutenant ROBERTSON are the following:

"1st. That special breeding in other directions is rendering it more "and more difficult each year, to obtain the proper type of cavalry "mount.

"2d. That the absence of depots in accessible places to which raisers "could bring their animals for sale, and the desultory manner in which "Purchase Boards are compelled to travel through the country in search "of material, is not a system best calculated to obtain such animals as *are* "fit for the service.

"3d. That the fluctuating nature of prices, depending upon the "amount of the yearly appropriations, is not calculated to encourage the "raisers to seek the Government market. A dealer who is offered only "$125 for an animal for which another Board, more liberally supplied with "funds, would have the year before given $150, is naturally disgusted "and inclined to seek a more equable mart for his wares.

"4th. That officers are rarely put upon Purchase Boards with regard "to special fitness therefor, and that the changeable character of the yearly "boards allow few to even become experts. In European cavalry the "'remount officer' is selected from those specially trained in hippology,

"and fitted by their knowledge of the horse and the tricks of dealers, to "competently purchase him. The services of such men are highly valued, "and they are continuously kept in demand. By this means their know- "ledge of the market, and their relations with the different dealers, re- "main unbroken from year to year, with obvious advantage to the Gov- "ernment."

It will be observed that in all these defects except the first a condition of affairs is presupposed which no longer exists, and that to the defects enumerated by Lieutenant ROBERTSON must be added the two enormous ones of the contract system and inspection by citizen experts.

Two alternative remedies are considered by the Lieutenant.

The first is one proposed by Captain GEORGE E. POND of the Quartermaster's department, which is that of a "general horse depot on the same "plan as general depots of the Quartermaster's department for supplying "the whole service with all animals for cavalry, artillery or draught "purposes. The depot to be directly under the Quartermaster-General, "and to keep on hand a reserve supply of animals."

In considering this plan the Lieutenant provides that the officer in command of the depot should be of high rank and a *cavalry man par excellence* with his command entirely separated from service with any other corps relative to the duties of his garrison: that he shall be assisted by an able corps of subordinates specially selected for their interest and skill in everything pertaining to the horse: and that a battalion of cavalry large enough to furnish one private trooper for each two horses be attached to the depot. A permanent Purchase Board of three expert cavalry officers with an officer of the Quartermaster's department attached, is another important provision of his depot plan.

The general purpose of the depot, as sketched by Lieutenant ROBERTSON, would appear to be to provide a place in which the horses purchased after proper inspection might receive suitable instruction and training to fit them for service when drafted to regiments, and where officers and men might also receive valuable instruction. There can be no two opinions as to the good results which might be expected to follow from the establishment of an institution of this character, whatever may be thought as to the practicability of the scheme.

It is stated in Lieutenant ROBERTSON'S article that Captain POND who suggested the depot plan, "objects to the Purchase Board of three officers as being cumbersome and productive, from lack of unanimity of opinion which often exists among them, of delay in the transaction of business;" from which it may be inferred that the plan as developed by Lieutenant ROBERTSON bears but slight resemblance to that proposed by captain POND; and it is safe to predict that no plan for the establishment of a

depot, or depots, to be placed under the control of cavalry officers would receive encouragement or toleration from the Quartermaster's department.

As regards the other alternative remedy proposed by Lieutenant ROBERTSON, that of a Breeding Station, its realization is so remotely improbable that is does not come within the practical view of the subject which I have preferred to take. It is possible that some of the younger cavalry officers may live long enough to see such an institution established, and they cannot use their pens to a better purpose than in building up a sentiment which shall lead to improvement of that character.

But looking to the present and pressing needs of the service the remedies which I would suggest as being worthy of consideration may be briefly summarized into, 1st. The abolishment of the contract system of purchase with its inspections by citizens, and 2d. The establishment of an invariable system of purchase in open market by boards of cavalry officers.

For the proper working of this system a standard price to be paid for a cavalry horse should first be determined and fixed. The price of horses in the market does not fluctuate greatly from year to year, and there is no wide disparity of prices in different parts of the country. But if deemed best the price could be fixed by the Quartermaster-General each year and for different localities.

The amount appropriated by Congress for cavalry remounts should be apportioned by the General of the Army among the several regiments according to their needs and the requirements of the service.

The disbursement of the several sums should be made by the Regimental Quartermasters under the direction of the colonels of regiments, who should designate the officers for the Board of Inspectors; which should be a permanent body in each regiment, composed of the veterinary surgeon and a suitable number of officers.

The horses should, as far as practicable, be bought at the headquarters or principal station of the regiment, or as close as possible thereto.

Upon the establishment of this system it would soon become known that at every large cavalry station there was a constant and unfailing demand for horses of a certain type, for which fair prices in cash would be paid. The demand would certainly result in the forthcoming of a supply; and the Boards of Inspection by keeping before them a high standard, would as certainly improve the character of the horses presented and correspondingly the excellence of the regimental mounts.

The opinions and criticisms of his brother officers would stimulate each member of the Inspecting Board to conscientious effort in the direction of improvement; as surely, the rivalry between the regiments would cause the commanding officers to exercise close supervision to see that the

amount allotted to his regiment was expended to the best advantage, to the end that his regiment should not suffer in comparison with others as to the character of its mounts.

It may be objected that this system will not be found applicable to a condition of war; but at any time it can be merged into a system of purchase and accumulation at supply depots, and will in any event give us a supply of officers competent for duty of inspection, whose services will be available in time of need.

It is confidently believed that it will also greatly improve the character of our mounts; that it will create demand for cavalry horses of a proper type; and may we not further hope that it will tend to foster such a spirit of emulation and *esprit* as will add to the efficiency of our corps, and without which there is no hope of improvement or progress.

DISCUSSION.

BY COL. E. V. SUMNER.

MR. CHAIRMAN—The paper written by Captain HARRIS, of the 1st Cavalry, on the subject of remounts and purchase of cavalry horses, read before the society, seems to have been pretty generally approved. Captain HARRIS is one of our best cavalry officers, his long service having been almost constantly with his troop, his statements may be considered worthy of consideration and of value to the service. The difficulty is to convince those in authority that any statement from a cavalry officer is made solely from a cavalry view, and does not contain a prejudice. Years of experience in the care and management of horses should be taken into account, and few quartermasters in the army have had that experience.

The purchase of cavalry horses is important, as a matter of business and as such it is difficult to perceive why it is not conducted on business principles. The law in regard to the matter is as follows: "For the purchase of horses for the cavalry and artillery and for the Indian scouts and for such infantry as may be mounted [blank] dollars: Provided, that the number of horses purchased under this appropriation added to the number on hand, shall not at any time exceed the number of enlisted men and Indian scouts in the mounted service; and that no part of this appropriation shall be paid out for horses not purchased by contract after competition duly invited by the Quartermaster's department, and an inspection by that department, all under the direction and authority of the Secretary of War."

Unless a strict compliance with this law will work its own repeal it is plain to be seen that there is no hope for a cavalry board, except such as may be convened to condemn worthless animals purchased under it. The number of horses condemned by these boards may be taken as a fair subject of consideration by those who appropriate the money and provide for the manner of purchase. The procedure under the law is as follows. An officer of the Quartermaster's department is provided with the funds and directed to purchase a certain number of horses for cavalry and artillery, a citizen is employed as an expert, which is a confession at once that the officer is not capable to perform the duty. After the horses are purchased they are branded "U. S.," at once paid for and shipped direct to troops without any other inspection, and the government is put to the further expense of transporting horses, some of which are sure to be condemned. A board of experienced cavalry officers could certainly do better than this, and I fully agree with Captain HARRIS that no horse should be accepted for the service, or paid for, until he has been inspected by such a board; every officer on the board to sign the report and be held responsible. Neglect to perform this duty properly on the part of cavalry officers has no doubt caused the framing of the law now in force. No officer should be detailed on a horse board who would be obliged to resort to the opinion of an expert.

Generally speaking past experience has nothing in it to recommend the board system but proper care in the selection of officers, or the adoption of regimental boards as Captain HARRIS suggests would no doubt fulfill the expectations of those in authority who naturally desire efficiency. It is much more difficult to select a good horse than to find the man to ride him: and when the man and horse are brought together in the service of the Government it becomes a matter of great importance that neither shall fail the other. The original purchase money of the horse, as to the amount, dwindles into significance when it becomes necessary for his rider to be on hand to assist in "saving the day:" therefore it is better and cheaper to pay a fair market price for a fair serviceable horse than to throw away a moderate sum on a poor one, and finally lose man, horse and equipments on the battle field. The object is to have every horse fully up to the standard. This, no doubt, is also the desire of the Secretary of War, who by law is invested with "all direction and authority," but it can only be accomplished by men who understand how to examine each animal and who combine with this knowledge an undoubted interest in the service as well as a keen desire for success.

THE NEW FIELD ARTILLERY GUN AND CARRIAGE.

BY CAPTAIN C. W. WHIPPLE,

ORDNANCE CORPS, U. S. ARMY.

CERTAINLY by next spring new steel guns and carriages will be issued to all our field batteries. As both contain features which are novel, and from their lightness are suitable though not especially designed for horse batteries, it was thought the Association might be interested in a brief description of them.

In 1879 our field batteries were still armed with 3 inch M. L. rifles and light 12 pounder guns, which, with the 10 pounder Parrott guns, constituted the armament for this service during the war.

Appropriations for the manufacture of ordnance material were so limited that little could be done in any direction in the way of improvement. But in 1879 one 3 inch M. L. rifle was converted into a breech-loader and the results obtained were so satisfactory that it was recommended that a battery of such guns be made for issue and trial, simply as a temporary substitute for the more improved gun which was even then recognized as a necessity. The gun was converted from a muzzle into a breech-loader by cutting off the breech and cascabel, and screwing in a steel breech-receiver, in which worked transversely a sliding breech-block.

The following year another gun was converted on the same plan, but the bore was enlarged to $3\frac{18}{100}$ inches in order to remove the old lands and admit of re-rifling with an increased twist. This gun was subsequently reamed out to $3\frac{25}{100}$ inches, and was then used in many experiments for testing carriages, powders, and projectiles.

Six of these guns were shortly after issued to some of the light batteries and were accepted as a great improvement over the M. L. rifle. Its shell weighed 13 lbs., and its powder charge was 3 lbs.

This gun is mentioned because on the results obtained with it were partly based the calculations for the new steel gun; and because six (6) of them are now in service, mounted on steel carriages made at the Watervliet arsenal.

In September, 1882, the Chief of Ordnance addressed the Ordnance

Board desiring them to submit a design for a steel breech-loading field gun with the interrupted screw fermeture, directing their attention to the fact that built up guns, consisting of a steel barrel strengthened by a layer of hoops or by a jacket, were generally adopted in modern guns abroad and thought to be preferable.

It is, of course, not the province of this paper to enter into any minute or theoretical description of the construction, but I would call attention to the fact that every detail was calculated with the same nicety as if it was designed for one of the heaviest sea coast guns.

The board, according to their instructions, decided upon a piece intermediate in weight, between the lightest and heaviest field guns in use in foreign services, and this gun was ordered made at the Watertown arsenal. It was constructed entirely of American steel furnished by the Midvale Steel Company, of Philadelphia, and the trials of it commenced at the Proving Ground at Sandy Hook in July, 1884. When I left there last July it had been fired some 2200 rounds, -out of which 1800 had been prescribed as the proof for endurance — and was still not unserviceable.

Before giving the dimensions of this gun—which is identical with those to be used, except in some minor details—it will be as well to enumerate or define some of the guns of foreign services, with which it may be compared, and those have been selected which are classed as horse artillery guns in order to show by the comparison the adaptability of our own for this especial service :

Denomination	Material	Calibre inches	Weight lbs.	Length in calibre	Powder charge	Weight of projectile	Muzzle velocity
Krupp....7.5 c.m.	steel hooped	[illegible]	[illegible]	24	[illegible]	[illegible]	[illegible]
Austrian 8 c.m. 7 c.m.	Compressed bronze	[illegible]	[illegible]	24	[illegible]	[illegible]	[illegible]
English ..9 Pdr. M. L. ...	steel body, wrought iron jacket	[illegible]	[illegible]	22	[illegible]	[illegible]	[illegible]
Spanish.. 8 c.m.	steel body, transformed Krupp	[illegible]	[illegible]	22	[illegible]	10.12 lbs.	[illegible]
German ..Light Mod. 73..	steel hooped..............	[illegible]	[illegible]	24	2.7? lbs.	11.15 lbs.	[illegible]
French....8 c.m.	steel hooped	[illegible]	[illegible]	26	[illegible]	[illegible]	[illegible]
Russian.. .Light Mod. 79	steel hooped..............	[illegible]	[illegible]	[illegible]	[illegible]	15.12 lbs.	[illegible]

With the exception of the English 9 pdr. these guns were breech-loaders, and all were in existence at the time our gun was designed. The English have since adopted 9 and 13 pdr. B. L. guns, and the Germans have a gun with a calibre of 3.15 inches; but otherwise there appear to have been slight, if any, changes made.

Now the corresponding data of the new gun are as follows :

Calibre 3.2 inches.

Weight 791 lbs.

Length in calibre 26.

Powder charge $3\frac{1}{2}$ and $3\frac{7}{8}$ lbs.

Weight of projectile 13 lbs.

Muzzle velocity 1686-1740 ft.

Consequently, with a weight which is very moderate, it has a higher initial velocity than any given above, with a shell weighing considerably more than any enumerated except that used in the Russian gun.

DESCRIPTION OF $3\frac{3}{10}$ INCH STEEL B. L. RIFLE.

It is composed of an untempered steel tube containing the bore and the seat for the gas check; of the jacket shrunk over the rear of the tube and projecting 5.6 in rear of it; the trunnion ring, sleeve, key ring, and the base ring, which, screwed into the rear part of the jacket, forms the seat for the breech-block.

It will be observed that two charges of powder were given. These correspond to different gas checks furnished with the gun and were consequent upon the different amounts of powder space which they occupied.

These checks are called the De Bange and Freyre. Each was subjected to a test of at least 1,000 rounds, and though—as is almost invariably the case in experimental work—slight changes had to be made in the earlier stages of the firing, both worked admirably. The Freyre is much simpler in construction and takes up considerably less powder space: on the other hand the De Bange check—which has been very successfully tried in this country as well as everywhere abroad in guns of large calibre—is less likely to be damaged and to that extent is preferable. The parts of both are easily replaced when injured. Both of these checks were attached to the end of steel spindles, which passed through the centre of and were secured by nuts to the breech block, and both the block and the seat for the check in the tube were so formed that the spindles could be interchanged at will.

The block itself was fastened to the body of the gun by a screw with an interrupted thread, which was locked and unlocked into corresponding threads in the base ring by means of a lever handle.

The other parts of the breech mechanism are: 1st. The carrier ring, hinged to the left side of the base of the jacket, which forms a support for the breech block when the latter is withdrawn and is swung round to expose the breech for loading; 2d. The bronze or fixed handle which serves as a hold for the right hand in withdrawing the breech plug; and, 3d and 4th; the stops and the latch pin for carrier ring, the former serving as guide for the breech block during its manipulation, and the latter automatically locking or unlocking the carrier and jacket in such a manner that they may be united while the block is being slid in or out, and disconnected when it is ready to be swung on its hinges.

Moreover during this last movement, the latch pin connects, by the action of a spring, the carrier ring and breech block together with sufficient firmness to prevent any probable movement of the one within the other while the block is being swung forward for insertion, until the carrier has reached its seat. This is an important precaution to prevent the gas

check from striking and being injured. When ready for firing the breech block is locked in position by the head of the lever handle, which then rests in a recess in the upper part of the carrier ring.

In the De Bange gas check the head of the spindle is shaped like a mushroom, and in rear of it, slipped over the shank of the spindle, is a ring or pad of plastic material, which rests in rear against the face of the breech block. The plastic substance used is a mixture of asbestos, tallow, and graphite, formed into a pad in a die under great pressure. The mushroom head receives the pressure of the powder gases, and the pad, by its compression effects the obturation.

In the Freyre gas check the spindle terminates in a head having the form of a conical frustum. The head is embraced by a ring with a conical interior surface, and with its exterior surface in tight contact with the walls of the gun. The base of the ring rests against the face of the breech block, and the ring is so adjusted as to leave a slight space between this face and the head of the spindle. When the powder gases act, the head is forced back and wedges out the ring until it fits accurately on its seat and prevents any escape of gas. Though both of these checks are very durable, in service extra pads for the De Bange and rings for the Freyre check would of course be furnished with other spare parts, and could be adjusted in a few minutes.

The working of the breech block is very simple. It is opened by one man in four motions, in which he uses both hands without changing them, and, as the gun need not be sponged nor the vent pricked, the loading is accomplished very quickly. No manual has been adopted for the gun, but two cannoneers can manipulate it very rapidly in every respect, during firing, except running forward into battery after discharge, and even in this respect we are better off than with the old muzzle loader, as from the use of the check attached to the new carriage the recoil is less than before.

The remaining details of the gun which affect the ballistic properties are the chamber, which is elipsoidal in shape and 10 inches long, and the rifling in which there are 24 lands and grooves: width of lands, .12; width of grooves, .3; depth of grooves, .05, and pitch uniform one turn in 30 calibre.

PROJECTILES.

The projectiles used in testing the gun were cast iron shell and various experimental shrapnel. Both had a single copper band ½ inch wide attached near the base to produce rotation; the shell had a Hotchkiss base precussion fuse and contained a bursting charge of 6¼ oz. of musket powder; the shrapnel had a point time and percussion base fuse; were made first of cast iron and afterwards of steel; but none had been definitely adopted when I left the proving grounds.*

* It was intended to put a point time fuse also in the shell.

The powders were of two kinds: one, called by the manufacturers, L. X., with the additional letters A, B, C, etc, according to its lot, had a granulation of 270 to the pound, and a specific gravity of 1.706; and the other, the I K type, had a granulation of 2,200, and specific gravity of 1.725.

The L X powder, which gave the higher pressures and velocities, is formed of regular, flat, square prisms, but the I K powder has an irregular grain.

To show the results obtained I have selected certain extracts from the report of the board for testing rifled cannon, which is contained in report of Chief of Ordnance for 1885.

The gun was fired over water to obtain ranges, taking a mean of 10 shots at each elevation, for every 2° from 0° to 20°. At 20° (beyond which the splash in the water could not be seen) the mean range was 6,479 yards, or 3¾ miles, with a mean deflection of 95½ yards.*

It was fired at a target 20′x40′, distant one mile, and the mean deviation of 8 shots was $2\frac{4}{10}$ feet.

Fired for rapidity the best result obtained was 50 rounds in 25 minutes, but it must be remembered that not only was the gun run forward into battery after each round, but all the cannoniers were obliged—in accordance with the orders of the Proving Ground—to be under cover when the gun was fired, which necessitated the men running from twenty-five to thirty yards before each discharge, and the officer in charge to delay the order to fire until he personally saw that all was secure. The gun was also fired 100 rounds in 90 minutes.

Our first effort in making a suitable metallic carriage did not meet with the success attained with the gun, but there was the consolation of knowing that everywhere abroad the problem was found equally puzzling.

In the first one made in 1879 the cheeks were of steel $\frac{3}{16}$ inch thick, reinforced by angle iron, but the axle was of wrought iron, braced by rods to the cheeks. Almost at the first round the wrought iron axle commenced to bend so it was replaced by a steel one, which, however, did scarcely better. Abroad all sorts of devices were tried to overcome the same difficulty: cork and rubber buffers, hydraulic or pneumatic cylinders, all were tried to take up the excessive and disastrous recoil due to the large charges used with the new guns.

Colonel BUFFINGTON, to whom the carriage had been referred for repairs, reinforced the steel axle by two steel plates [illegible] inch thick, projecting

* To give an idea of the uniformity obtained I have selected hap-hazard the ten shots fired at 10° elevation.

The times of flight [illegible] with a stop watch [illegible] was in order [illegible] 20, 20, 20½, 20, 20, [illegible], 20, 20½, [illegible]. The ranges were 5,7[illegible] yards, [illegible], 5,716, 5,684, [illegible]667, making the mean [illegible]. And the deflections to the left (the wind was blowing from the right and rear 20 miles) were in yards [illegible].

front and rear and riveted together. This gave to the axle the structure of a beam with its depth in the direction of the greatest strain: from that time no more difficulty was found in that particular. Colonel BUFFINGTON also applied to this carriage a very simple and effective recoil check or brake, which reduced the recoil when fired on a platform from about 24 feet to about 7 feet.

The brake—attached to each side—consists of two rods, one of which is connected by an eye to the axle shoulder at one end and at the other is screwed into a housing, which encloses a stout spiral spring. One extremity of the other rod, passing through the spring, terminates in a nut which bears against the spring, while the other extremity terminates in a shoe which can be fitted to the tire of the wheel. It works very simply; stops the recoil without unduly straining the wheel; can be attached or removed from the wheel at will; and on the march serves as a mud scraper.

These two—the axle and the brake—are the only features which stood the final test. No matter how repaired, the carriages of this type ultimately gave way—sometimes in the cheeks, sometimes in the trail. One, however, fairly stood a test of 574 rounds.

Carriages were needed for the converted field guns, then ready for issue and which could not be fired at all on the wooden carriage, so for want of a better a sufficient number of these carriages were manufactured and issued to the service. We had one at Sandy Hook and during the test of the steel gun it had frequently to be repaired.

Colonel BUFFINGTON then presented a new design embodying these features described above as successful, but differing essentially from other carriages in the construction of the cheeks. These were made of double steel plates, riveted together with curved flanges above and below.

It weighed 1,300 pounds and stood perfectly well 500 rounds of $3\frac{3}{4}$ pounds in the steel field gun. Its perfect condition at the close of this trial, which was made as severe as possible, caused its adoption, and 25 were ordered constructed and some are now, I believe, in service. Twenty-five extra guns and carriages were also ordered by the Chief of Ordnance, and in his estimates for this year he asks for money enough to increase this number to 100.

In many respects this carriage* resembles other modern carriages: it has a trail chest for tools which are indispensable for a breech-loader; the wheels are of wood with metallic naves; but the characteristic features are the double cheek plates, united by transoms, the spring brakes, and the flanged axle before described.

*Krupp, 7 C. M. gun and carriage	1,672 lbs.	Spanish, 8 C. M. gun and carriage	[illegible] lbs.
Austrian, 8 C. M.	1,685	German, 8	1,898
English:		French, 8	2,101
Armstrong, 12-pdr.	2,184	Russian Light	1,802
Woolwich, 13 pdr.	2,582	3.2 in steel	1,900

LIMBERS.

Metal limbers were made in accordance with the views of the Light Artillery Board 1885, but as a new design has been approved this year, I take for granted those issued were not successful. The limber body with its wheels and pole weighed 805 pounds. In order to determine the propriety of making the ammunition chests of steel, one of them, made of plates about $\frac{1}{15}$ inch thick, was sent to the Proving Ground and tested, in comparison with the ordinary wooden chest, by firing at them with the 45 cal. Gatling gun. Both chests were filled as for service with loaded shell, shrapnel, cartridges, etc. The steel chest weighed with its partitions $316\frac{1}{2}$ pounds, the wooden one 185.

Beyond 500 yards the steel chest was not perforated when struck, while at 800 yards more than 50 per cent. of hits on wooden chest were penetrations.

Nevertheless, the Board decided in favor of the wooden chest, for the following reasons:

1st. If shell, shrapnel, or specially prepared explosive bullets are used, both chests would be destroyed at 400 yards.

2d. At 400 yards the wooden chest is more readily perforated, but such perforations are unlikely to cause explosions.

3d. The wooden chest weighs $131\frac{1}{2}$ pounds less than the steel one.

4th. Can be repaired more readily in the field.

5th. Is much the less expensive.

The Chief of Ordnance in his report for this year states that an improved limber, caisson, battery wagon and forge for the new field guns have been made a special study during the past year by Colonel BUFFINGTON and Major WILLISTON, and that the manufacture of these carriages will be commenced at once; also that Major WILLISTON has submitted a report on his improvement in artillery harness.

As a consequence the new guns and carriages should find next spring the remainder of the battery equipment equally new and, I doubt not equally efficient.

THE USE OF ARMS, MOUNTED.

BY CAPTAIN W. P. HALL,

FIFTH CAVALRY, U. S. A.

DURING a service of more than eighteen years in the United States Cavalry, I have yet to see the first cavalry soldier who could use his arms on horseback. I refer particularly to the revolver, and will pass the sabre by — with a few reasons for retiring, on account of physical disability, this time-honored cavalry weapon.

For the purpose of comparing the sabre and revolver I take the effective range of the former to be four and one-half feet, and that of the latter ten yards, and will assume that a sabre-thrust through the body or a hard blow over the head are of equal efficacy to a pistol-shot wound. I take it that four seconds would be required to successfully carve one man and get within sabre range of another. *I know that in three and one-half seconds* an expert pistol shot can fire with accuracy five shots from a revolver at a distance of over ten yards with horse at a run. There is no reason why a cavalryman should not carry two or even four revolvers, if he knows how to use them; and if he does not know how to handle them, I believe him better off without any. With this number of pistols it would be difficult to imagine a case where his fire would become exhausted before he had an opportunity to reload.

To recapitulate: We have for the maximum range of the sabre four and a half feet; the revolver is equally good for thirty feet, with possibilities far beyond that distance. The rapidity of execution with the sabre, four seconds, while that of the revolver is less than one second. "Surely the tenacity with which we cling to arms ancient might well make "a wise soldier laugh, were not its effects so pernicious as to sometimes "make a good soldier weep."

Some cavalrymen claim that if the sabre is done away with we are reduced to the grade of mounted infantry; others say that the time for doing good work with cavalry is ended — certainly neither of these classes can have a conception of what a terrible weapon the revolver becomes when in skilful hands. I know of but one instance where its use by a

mounted organization has ever been perfected, but the results in this are more than sufficient to establish it supremacy as a cavalry weapon, were we entirely devoid of individual cases in which a high degree of skill had been attained.

The organization to which I refer was a remnant of QUANTRELL'S command under a leader named BILL ANDERSON (claiming to belong to the confederate army), who infested the northern part of Missouri during the last year of the war of the Rebellion. These men were armed with three or four revolvers each, and at the time to which I refer numbered about fifty. They attacked, upon an open prairie, a command of our mounted troopers whose numbers I have heard variously estimated at from 200 to 250. ANDERSON'S command lost but five or six men and only eight or ten of the Federal troops escaped with their lives; the others were laid out over the prairie for a distance of four miles and were killed with revolvers. I have been informed, and I believe credibly, by men who belonged to ANDERSON'S command that mounted pistol practice was their principal occupation.

The deplorable deficiency of our cavalry in the use of their arms mounted is but too vividly pictured in the engagements with mounted Indians during the last twenty years. Here I propose to make particular reference to but one battle. At the close of our late Civil war the reputation of General CUSTER as a cavalry commander was considered by many as second to none of those gallant cavalry officers trained in this most excellent school: he commanded the 7th Cavalry for some time previous to 1876. Many of his captains had been trained in the same school of experience, and he had time and opportunity to give the 7th Cavalry the training and discipline suggested by his extended service, and it is certainly fair to suppose that this regiment in 1876 was a fair sample of the United States Cavalry.

Nearly three hundred of these troops under General CUSTER'S command were attacked in an open country, where they were expecting an enemy, and according to the best accounts I have been able to obtain, were annihilated in the short space of half an hour. The Indians claim to have lost but thirty five killed and say they crowded in upon the cavalry so as to make the fighting almost hand to hand. The cavalry seem to have been marching by fours or twos, and when attacked on one flank it is presumed they formed, or attempted to form line towards the enemy; the country is so level that the Indians would not have attacked on both flanks at once for the reason that their fire would have been almost as fatal to one another as it was to the cavalry. Now it would seem to go without saying that in two mounted organizations engaged as these were, the numbers of men on each side *actually fighting at any one time* were approximately equal, with perhaps some advantage in favor of the Indians,

I can picture the men of General CUSTER's command in this engagement as having all they could do to sit upon their horses, having little control over them and entirely incapable of handling their revolvers, which I believe to be the only weapon for mounted firing. I believe in the *short carbine* for cavalry, but think it should be used on foot only.

There is but one way to account for this and other disasters to which our cavalry has been subjected in recent Indian engagements, and that is, our poor riding and the utter inefficiency in the use of our arms on horseback. The mounted Indians have been trained all their lives at this kind of work and it is needless to say how much the average cavalryman gets. The great difficulty incident to training men to manage their horses and handle their arms when mounted only makes the accomplishment the more valuable when attained. I know the road to success in this line is far from being a royal one, and the work and drudgery connected therewith is very great, because it involves what is known as snap shooting with the revolver. I am thoroughly convinced however that one thousand men trained to use this weapon mounted would surpass in efficiency ten thousand cavalry such as we now have, and I furthermore fully believe they would in close quarters be far more than a match for double their number of infantry. Opportunities would occur in which such cavalry could surprise infantry or get amongst them under cover of night, and in such an event with the power of firing with accuracy five shots in four seconds, and the confidence a courage which a knowledge of this skill would give them — I believe they would easily destroy more than their number before they could be checked.

The time seems to have passed when men become very eminent in more than one line, but this very condition of things brings with it the surety that an expert in any useful direction is certain to find a demand for his work; and if we propose to make a reputable score as cavalry in the future, I believe we must bend our energies to training our men to ride and shoot when mounted; with this feat once accomplished, there will be a lively demand for our services so long as there are horses to ride and powder to burn.

DISCUSSION.

BY GENERAL MERRITT.

I am too firm a believer in the value of the sabre as an arm for the cavalry to consent to its abandonment without abundant evidence that there is something better to replace it. Hundreds of years of war of every description are the vouchers for its effectiveness as an arm. Nor do I fear the charge of too great conservatism. I have listened with great interest to the paper of Captain HALL, and while I was unfortunately prevented from being present on the evening when Lieutenant SWIFT read his paper, I am told that it was quite as convincing as the other.

I am satisfied that the subject discussed by these gentlemen is worthy of careful attention by cavalry officers. We should ponder well before dismissing their propositions, but, as has been said by one of England's foremost modern soldiers, the nation that abandons the sabre will have abundant reason to regret its rash act in the first war in which it may become engaged.

Those who advocate the use of the pistol as a weapon for cavalry invite an unnecessary hostility to their proposition by insisting that it must replace the sabre. Let us rather agree that if the pistol can do all or a part only of what is claimed for it, to secure it the place it has already had in our armament and a better place than it ever has had in the drill and preparation for its use.

This is all, I understand, that its advocates claim. It is certainly all that I, as an army officer with some experience in the cavalry arm of the service, would be willing to have conceded.

The history of the sabre is a glorious one and dates back to remote ages. I could not, if I had the time, do justice to its exploits. They are coincident and coeval with the great events of war.

The pistol, in one form or another, is as old as gunpowder. Is it not strange then if all that is now said of it is true, that some little of its merits have never been known before? Mind you, I am not prepared to say that much that our essayists have written is not true, but I beg of these gentlemen, for the sake of their own cause, not to attempt to discredit a weapon whose record is a blaze of glory, by an arm whose single exploit dates back to the Civil War, and whose one title to effectiveness is the massacre of a party of unskilled, undrilled volunteers by a band of Confederate "irregulars."

I repeat, I am very greatly impressed by Captain HALL's views and facts. If a command of mounted men can be instructed to the proficiency he claims is possible, and I for one am not prepared to deny it, such command would be a terrible enemy to meet on the field of battle. I am not only not willing to deny the possibility of making our cavalry all that Captain HALL claims in this regard, but I am prepared to believe that it can and will be done, and that the American Cavalry will be competent in the future to teach the world lessons that will be well worth the learning. It has done this in the past, why should it not in time to come?

SABERS OR REVOLVERS?

By EBEN SWIFT,

1st Lieutenant 5th Cavalry.

ALTHOUGH the sword has not been the most effective of the horseman's weapons its position has been maintained by a brilliant literature. Some nations have even worshipped the naked sword, and we find the legend of the *arme blanche*, the beautiful white weapon, woven into every history and romance for centuries. We will also find that a great deal has been said and written about the spear and lance, pike and bayonet, bow arbalist and sling. A great amount of scientific and professional attention is devoted to the rifle, the cannon and the machine gun, and no science can show greater progress in invention than the science of ordnance and gunnery. The revolver alone has received scant attention as a weapon; there is hardly an intelligent notice of it to be found in any book, encyclopædia or pamphlet, in any language; its use in war is a novelty; it has been distrusted by its friends and ridiculed by good cavalry soldiers; and it is to-day substantially the same weapon that was patented by Samuel Colt some fifty years ago.

In the armed contests of men the combatants have been principally divided into horse and foot. To make the proper distinction and to preserve to cavalry its essential spirit, we will here define the cavalryman as one who habitually uses his arms on horseback; he may at times dismount to fight on foot, as did the English Knights at Cressy, or Sheridan's troopers at Appomattox, but the spirit, the life and the nerve of cavalry lies in its ability to use its weapons mounted. An infantryman with a horse, which he uses simply as a means of locomotion, is no more a cavalryman than he who goes to the battlefield in a buggy or on a railroad car.

In the struggles of horse and foot, we will see that a victorious infantry can seldom produce solid results, unless assisted by an excellent cavalry. Thus the great victories of the English long-bowmen gave no permanent advantages to the victors; the Swiss pikemen, though so often victorious, saved only their liberties, but did not discourage their enemies;

Napoleon's victories at Bautzen and Ligny, supported by an inefficient cavalry, did not avert Elba or Saint Helena, as should have been expected. On the other hand, the proper use of a superior horse has made decisive the greatest victories of every age. There will be many drawn battles in future unless cavalry regains the prestige it has lost.

Cavalry has repeatedly met defeat at the hands of infantry, but up to 1870 it has been able to win back its old honors after each disaster. So the Roman legions were destroyed by the Numidian horse; the Turkish janizaries were routed by the cavalry of Tamerlane; the Grecian phalanx was broken by Roman cavalry; the Spanish infantry went down before the French dragoons. But cavalry is slow to recover from the blows received on the day of Sedan; there, upon the fields of Floing and Cazal, the best cavalry of Imperial France was ruined in an attempt to drive back the German skirmishers. At some places, indeed, the lines of skirmishers were broken through at the first onset, but the fire of the supports in all cases destroyed the force of the fierce charge.[1]

Let us reflect that cavalry is still armed with the weapons of barbarism or of chivalry, that the traditions of Seydlitz, of Ziethen, of Murat are still accepted models for our ambition; that no great improvement has been made since the days when Frederick the Great gave orders that any cavalryman should be shot who would receive a charge at a walk. Need we wonder, then, at this defeat by modern infantry, or that this defeat was so disastrous and final, or that the use of mounted cavalry against unbroken infantry is universally regarded as a vain and useless sacrifice? Who will say that cavalry can ever regain its former position without many vital changes?

Cavalry, for weapons, have either used the missile or the hand weapon. The most terrible horsemen of any age have been those who used the missile. Jeremiah foretells the day when "the whole city shall flee for the noise of horsemen and bowmen."[2] The invention of the saddle is ascribed to the Persian mounted bowmen who thus increased the security of the seat.[3] The Scythian soldier overran the most powerful ancient monarchies. His favorite weapon was the bow, which he used as he rode, shooting his arrows with great precision.[4] Rawlinson thus describes the Parthian cavalry: "It was carefully trained in the management of the horse and the bow, and was unequalled in the rapidity and dexterity of its movements. The archer delivered his arrows with as much precision and force in retreat as in advance, and was almost more feared when he retired than when he charged the foe."[5] Behold here a picture of a model cavalry

1. Official account. Part 1, page 375.
2. 29:4.
3. "Cavalry," by General De Peyster United Service, Magazine, 1880.
4. Rawlinson, Ancient Monarchies, Vol. I, page 494.
5. Same, Vol. III, page 227.

and I remember well that these horsemen often defeated the Roman troops —even the legions of the days of POMPEY and of CÆSAR. Since it has been established that the bow and arrow were among the weapons used by HANNIBAL's Numidian cavalry,[1] it seems altogether probable from their character as troops, and the customs of their descendants that their favorite weapon was the missile. From the arrow to the bullet we skip two thousand years. To-day the Cossacks, the Khirgiz, the Bedouins, the Algerians, and the North American Indians are expert rifle shots on horseback. The next step is to the revolver. Far excelling any previous device for delivering a missile or a blow at the hands of a mounted man, it will surely bring honor to that race which first adapts it to the modern battlefield.

Before discussing the weapons to be used, it is desirable, of course, to conduct the cavalry so as to arrive in the best possible condition within the effective reach of its arms. The two points will then arise: first, closing with the enemy, second, avoiding or turning aside the missile of the enemy.

Twenty-five years ago charging cavalry could traverse the range of the infantry arm in less than forty seconds, during which infantry could fire two shots. Now the zone of fire is increased to twelve hundred yards and more. In the German cavalry at inspections the cavalry are now expected to make four or five miles at the trot and gallop and then to execute the charge in full career without getting blown or winded.[2] But still the cavalry may remain under the fire of the infantry for three minutes, during which the latter may fire fifteen shots. The adoption of a fire weapon by cavalry would probably be followed by a slight increase of interval. The relative merits of echelon formations and of successive open lines with closed supports would have to be tested.

The second consideration is how to avoid or turn aside the missile of the enemy. The various irregularities of the ground, the constantly diminishing range where our horseman rides under the trajectory, the moral effect of the charging mass upon that which is standing still, the active and aggressive action of the horse artillery; all these will tend to make ineffective the aimed fire of the infantry. But the missile which has been unerring in its flight and reaches the frail body of horse or man can only be turned aside by defensive armor.

Breast-plates are tested by placing them as targets at about seventy-five yards, at which distance they resisted the infantry bullet up to 1884. In service they would be effectual at less distances, and when on the body of a moving man the resisting and deflecting power would be still more increased. There is no doubt about their having saved many lives in the

1. HANNIBAL's army in Italy, by General DE PEYSTER, United Service Magazine, 1880.
2. Letters sur la Cavallerie par le Prince KRAFT VON HOHENLOHE-INGELFINGEN, p. 73-4.

Franco-German war. The cuirass, consisting of front and back piece, the latter only capable of resisting the saber stroke, weighs from eight to eleven pounds according to size and is made of steel.

The alloys of aluminium deserve some notice here. The properties of the metal have only been known for about thirty years, since discovered by DEVILLE, and up to this day it has not become in general use owing to the expense of manufacture. This difficulty appears to have been largely overcome in the electric furnace so that the various grades of aluminium alloys are quoted at from sixteen to forty-five cents per pound. The properties of the metal are non-corrosive action, lightness, ductility; it is two and a half times heavier than water and is about as light as glass. So far it has been found that when more than ten per cent. of aluminium is used with copper the alloy becomes brittle; this grade has the lustre and color of gold. The latest government tests of this grade of aluminium bronze, hot rolled from a two inch billet to ¾ inch round bar are as follows:

Tensile strength 111,400 pounds per square inch.
Probable elastic limit 84,000 pounds per square inch.
Hardness 21.17.[1]

The average properties of 137 specimens of accepted gun steel, from hoops, jackets and tubes, oil tempered and annealed, U. S. Government tests, are as follows:

Tensile strength 96,150 pounds per square inch.
Elastic limit 51,611 pounds per square inch.
Hardness 21.4.[2]

The immense field of the alloys of aluminium has just been entered and we may only speculate as to the future and possibilities of this metal. But I think that enough is known to warrant the assertion that articles of defensive armor can be constructed, superior to and lighter than those in use, which will effectually protect against the infantry bullet, over a great portion of the zone of fire.

Eleven years ago in the last great European war the infantry bullet had attained immense power. A Russian general was killed by a Turkish bullet a mile in rear of the positions of his army in the Schipka Pass, men were picked off two miles in rear of the Pass, and were killed and wounded when sheltered by the brow of a ridge which rose thirty to fifty feet above them.[3] Balls after coming a mile entered the hard ground a distance of two feet, and a perpendicular distance of from six inches to one foot. One of these bullets would travel a mile and then go through a horse and

1. Aluminium Bronze for heavy guns. Proceedings of Naval Institute, page 662. Vol. XIII.
2. Page 606, same.
3. War Correspondence of *Daily News*. 1877. Vol. I. page 122.

any number of men who should happen to be in its line of march.[1] The fire arms of the next war will be still more deadly, and it seems strange that the subject of protection from this fire has not received more attention. The destructive effect of large guns forced the sailors to armor defense until they reached the very limit of its usefulness. Who knows but what we may build up to that limit on land? Whatever the future may be in this respect it seems to me that it is a more serious question for the cavalryman than for any other soldier. The infantry rifle is effective to such a great distance, it takes such a slight wound to place a man "out of the combat," the vital parts are protected by so delicate a casing, that the cavalryman should fairly be granted something of a protection while crossing the zone of fire powerless to reply to the enemy's bullets.

The cavalry having been conducted to the proximity of the enemy with a *minimum of loss and a considerable reserve of energy*, the next points for consideration are: first, the cavalryman's use of his weapons in delivering his blow, and second, as to his conduct after the shock.

It will be in considering the cavalryman's use of his arms that we must decide between the saber and the revolver.

It has been found that with the horse at speed six shots can be fired with deliberation and more or less accuracy while traversing a distance of seventy-five yards. No argument in favor of the saber can show that its effect extends beyond the reach of the sword arm of its owner.

Armed with the saber against an infantry armed with a breech-loader the most terrible part of the charging trooper is the horse. The saber is not feared; that weapon is hardly effective beyond the range of the horse's four feet as he thunders past; the foot-man is more apt to be struck by the horse than by the saber; the result of a collision with a running horse is more to be dreaded. This cool foot-soldier who now stands upon the skirmish line to receive the charging horse can at a few yards easily drop the rider who comes upon him, swinging his saber, thirty inches long, but he cannot stop the horse so well. The small calibers and heavy charges now adopted by infantry will enable an animal to travel a long distance and trample several infantrymen to death after he has received more than one mortal wound. At the battle of Beaumont, in 1870, the French Colonel DE CONTENSON with the 5th Cuirassiers charged the skirmishers of a portion of the 27th Prussian line regiment. DE CONTENSON fell mortally wounded within fifteen paces of the skirmish line, one of his non-commissioned officers was killed in attempting to saber the Prussian captain, those of the troopers who succeeded in running over the skirmish line were thoroughly defeated by the supports. The Prussian company gained its brilliant success without sacrifice; some of the fusiliers, run over or thrown down by the horses, had received such trifling contusions

1. Same. Vol. II, page 22.

that they remained with their battalion. On the other hand, the loss of the French regiment of cuirassiers in the charge amounted to eleven officers and upwards of one hundred men and a still larger number of horses.[1]

In the celebrated charge of the Dragoons of the Guard at Mars la Tour, their loss was 96 officers and men and 204 horses. Note again the loss of horses. Surely the horse in a charge becomes a projectile with great velocity and battering force. The infantryman must either stop him or get out of his way. "His neck," in the words of JOB, "is clothed with thunder; he rejoiceth in his strength, and goeth on to meet the armed men; he smelleth the battle from afar off, neither turneth he back from the sword." That is why so many horses are killed. Let us now substitute the revolver for the saber, and the effect of cavalry is at least doubled by the new element that enters the question. The skirmisher can no longer ignore the rider, the reach of whose terrible arm is now increased a hundred fold.

The saber is powerless against an attack on the left and left rear. The revolver can be used in either direction. The revolver stops the adversary with a single sledge-hammer blow, while a man may be covered with saber wounds and continue fighting. Instances of this kind are numerous. A good example was that of Colonel ALFRED STOWELL JONES, when a young officer, charging at the head of some lancers in the Indian mutiny. He received twenty-two saber cuts but did not give up his command.[2]

The revolver may disable the horse of your enemy, thus placing the rider "out of the combat."

With the revolver the rider sits squarely on his horse as he fires in every direction. To deliver a blow with a saber a trooper is apt to throw his center of gravity to one side — to lose his seat in fact. Every horseman knows the danger of a broken stirrup-strap, a shy, a jump, or a loose girth at such a moment. There is an immense difference between riding on a tanbark track and taking a run over an unknown bit of country. A man may swing his saber gracefully and effectively in a riding school, but it is different when you put a carbine-sling over his shoulder, fasten the carbine in its boot, surround his waist with a belt full of cartridges and build up the saddle in front and rear with articles of equipment.

The saber acts for but an instant — a cut, a flash, a point, and it is gone in the wild career of the charge. With the revolver twelve blows can be delivered — six before and six after the shock — to one blow delivered by the saber.

How long it takes to become a swordsman, especially with the horses

1. Official account. Page 276, part I.
2. The Cavalry of the British Army, by Captain SALESBURY, United Service Magazine, 1881.

we get! The horse of the sabreur must be skilled in all the arts of the manege. The idea of ever obtaining such a cavalry must always be a wild, gay dream in this country. But you can jump on a broncho, put him at full speed and shoot just as well as if you were riding a thoroughbred. Thousands of such a cavalry could be put in shape for efficient use in this country while the gentlemen of the saber are drilling at cuts and parries in their riding schools.

JOMINI's testimony is that the lance, not the saber, is the weapon of the shock; that the saber is the arm of the melee. The revolver is at once the weapon of the headlong charge, the struggle and the rout.

The use of the revolver is not expensive. Practice in the manual and in the manner of delivering the blow is most necessary. The mysteries of "getting the drop" should be learned without using cartridges.

The fine nerves of the expert rifleman are not essential. A gentleman whose hand shakes with a peculiar muscular tremor told me that he became a close snap shot with the revolver, notwithstanding his affliction. The fine eyesight of the sharpshooter is not essential, for there are good snap shots who could never win the sharpshooter's badge.

Suppose we acknowledge the saber to be the best weapon in the clear field, without mud, rocks and ravines. What does it avail against an enemy up a tree, on the roof of a house, even on the other side of a fence or under the band-wagon?

Prince KRAFT DE HOHENLOHE-INGELFINGEN, in his "Letters about Cavalry," says: "The staff dared not advance the cavalry divisions alone into the heart of the hostile country where they would have been surrounded on all sides by francstireurs, national guards and newly formed bodies of troops."[1] That is a good deal from a Prussian Lieutenant-General. What but vital defects of armament could bring German cavalry to such an acknowledgment?

The friends of the saber say, "It is always loaded." We answer, "So is the revolver. If you don't believe it, let any revolver be pointed at you and see how it feels." Mortal courage is born of confidence What man will face the smoking muzzle of his enemy's revolver and not believe it contains a messenger of destruction that cannot be parried by any arts of the fencing school and riding track?

First-rate authorities on the subject of the charge and the melee have stated that there are only a certain number of men in any command who are ready and eager to come to blows. A very large proportion is carried along by the elan of the former; they may add to the weight of the charging mass; they may even be rash in pursuit but would never stem the tide of defeat; they are more anxious to avoid than to receive blows.

1. Page 79.

This class of men cannot be relied upon to close with an enemy in a death struggle on equal chances. Neither can another class, still less aggressive, who have no heart in the fight and who will run away if they get a chance. It has been urged by the saber men that a man is brave according to the length of his weapon. This fact renders ineffective a large number of sabers of moderately brave men, who would use a pistol at ten yards, but not a saber at one yard.

Then there is the logic of figures. During our last war there were treated 246,712 cases of wounds which could be identified as shot, saber or bayonet wounds. Of these 522 were inflicted by the saber, and of these "a large proportion had their origin in private quarrels or broils, or were inflicted by sentinels in the discharge of their duties"[1] The proportion of deaths from these wounds was only five per cent., which forbids the idea that the saber left its victims dead on the field. In the war of 1866 there were 481 saber and bayonet wounds in all — Prussians, Austrians, Bavarians and Italians. If the proportion of saber to bayonet wounds was the same as in our war, about 270 can be placed to the credit of the white weapon. In the war of 1870–71 there were 976 Germans wounded by the saber and bayonet, and by the same ratio about 450 of these would be due to the saber. There were six Germans killed by the saber stroke. In that war the Germans had seventy thousand cavalry in the field, and the great cavalry battle at Mars la Tour was fought between five thousand horse.

We are almost reminded of those battles of the fifteenth century, about which MACHIAVELLI tells.[2] If the white weapon can do no better than this in three wars, it is certain the revolver will do no worse.

We have next to consider the conduct of cavalry after the shock. After the shock the cavalryman with his present armament finds that he has not injured the line of the enemy; he cannot stay there because he is a creature of offense only and is ruined by inaction or in any position where he is placed in an attitude of defense. So he rides away again on his jaded horse and the trodden infantry gets up and blazes away in his back as he goes. With revolvers the story of cavalry riding over an infantry force without destroying it need not again be told. We will here find an answer to the question propounded elsewhere as to the cause of the futility of the modern cavalry charge. The cause is not to be found in excessive losses, because cavalry have often reached an enemy's line that was bristling with artillery and breech-loaders. The losses in the advance have been so mixed up with those of retreat that it is hard to determine them, but it is probable that no cavalry from Balaklava to Sedan have charged with greater losses than those of PICKETT at Gettys-

1. Medical and Surgical History of the War. Surgical Vol., page 686.
2. History of Florence.

burg or of SKOBELEFF in the Green Hills. It has been well established that the greatest losses to cavalry have occurred after the shocks and this is for the reasons given. Cavalry must be provided with reserves near at hand to encounter the supports of the enemy's first line. Extra revolvers or reloading devices equal to those of General KELTON, are indispensable.

When cavalry encounters cavalry its role will be more simple than when it acts against infantry and many of the conditions mentioned before will still exist. Here supposing the enemy to be advancing at an equal rate of speed it will not be advisable to fire six shots before crossing his line; one shot will be fired at about seventy-five yards, one at about thirty and one at about fifteen yards The revolver-armed rank, while still intact and all unanswered, delivers three staggering blows upon the hostile line, then follows up the last blow with the full weight of horse and rider. There are now three shots left, and a trooper who cannot hit a man or a horse at ten yards distance, within three months after his first mounted drill, is not fit for the high and honorable calling of a cavalry soldier.

Great ignorance exists about the revolver among military men everywhere. An English cavalry officer who has lately written a book on modern cavalry discusses most subjects intelligently but dismisses the revolver from consideration on the ground that a trooper will have to pull up his horse in order to deliver an accurate blow.

Colonel KEITH FRAZER, also an Englishman, says: "It is to be hoped that revolvers, which are far more dangerous to friend than foe in a charge, will never be supplied to our private dragoons." The same officer says that if the training of recruits, which in the English service is performed by the adjutant and riding-master, is performed instead by squadron officers, they "must expect less individual proficiency in the soldier." This last remark will perhaps explain the Colonel's alarm over the use of the revolver. We will freely acknowledge how terrible a weapon it is in careless and ignorant hands. In the campaign of 1876, two officers of my regiment were wounded by their own revolvers; in the next year another killed his horse; shortly afterward two men in a small command on a scout shot themselves accidentally. In those days the revolver was carried for no known reason and men who had worn it for years were often most clumsy in its use. Within the last four years I have repeatedly seen the revolver given to recruits as soon as they were only *fairly* proficient in the school of the soldier mounted, and never an accident occurred.

The text book on "Minor Tactics," by Colonel WILKINSON-SHAW, in use at the U. S. Infantry and Cavalry School at Fort Leavenworth, does not mention the revolver at all, thus ignoring the fact that some two hundred thousand revolvers are in use in the Russian army, and that as a weapon it has at least a fair war record in this country. The author

says: "His (the trooper's) arms should not be used from the saddle except for the purpose of signal. Dismounted cavalry can use their fire-arms effectually."[1] The inference of course is that mounted cavalry cannot use their fire-arms effectually. Colonel WILKINSON-SHAW's remarks are taken from the Prussian regulations, and they give an average modern idea of the use of fire-arms by mounted cavalry.

Such ideas are common in our service as well as abroad. In answer to such criticisms I will give a few examples of the use of the revolver under various conditions; to show its quickness and sureness in the charge or melee as well as on foot; to show how it parries the stoutest blow or overhauls an enemy in retreat; and again to show its successful use by considerable bodies of men.

The guard of a railroad express car in Texas, opening the door of his car was confronted by a burglar who fired in his face. The guard drew his revolver and emptied the six shots into the burglar's body before the latter could fall or advance or fire a second shot. I was told this by the living actor and have reason to believe it to be true. In fact, it is no great feat to fire six shots with the Colt's single action service revolver in less than four seconds.

At Old Church, Virginia, in 1861, Captain, now Colonel, W. B. ROYALL, armed with a revolver, with two troops of the Fifth Cavalry, charged General STUART'S advance under Captain LATANE, who was armed with a saber. ROYALL and LATANE met in the headlong charge. LATANE was killed, but ROYALL was able to charge through the enemy and rejoined his command with six saber wounds.

At Solomon's Fork, Kansas Territory, in 1857, Lieutenant, afterwards General, J. E. B. STUART, with his saber, charged twice upon a single Indian who had a pistol. STUART was seriously wounded in the second attempt, and it took three officers and several troopers to kill that Indian finally.[2]

I borrow a few English examples[3].

"At El Teb an Arab was cutting down one of our fellows, when a farrier shot him dead so clean that the sword just cut through the man's scalp, that was all."

"Captain BURN-MURDOCK, of the Royals, with his legs jammed under a dead camel, at Abu Klea, succeeded in killing four or five Arabs who attacked him while in this critical position."

"A troop sergeant major of the 10th Hussars, says: 'On charging the Soudanese at El Teb, I first attempted to cut them down with my sword, but found I could do little execution with it; the enemy for the

1. Page 21.
2. Campaigns of STUART'S Cavalry, by Major MCCLELLAN, p. —.
3. Revolvers and their use, by Major KITCHENER, Journal of Royal U. S. Inst., 1887.

most part eluding my blows, and even when struck, appearing to suffer little from them; I then drew my revolver and soon knocked over three or four.'"

The famous Colonel BURNABY was killed in a useless saber fight with a couple of Arab spearmen. He was a *beau ideal* cavalryman, and if he had used a pistol he would probably be living to-day.

The official report of General JOHN S. WHARTON, C. S. A., commanding two thousand cavalry at the battle of Stone's River, in 1863, says: "The proper weapon for cavalry has proved to be the revolver."[1] A number of Confederate generals have given similar opinions. Major THOMAS HARRISON, Texas Rangers, in his report of a reconnoissance on the day following Shiloh, says: "The front line of the enemy's infantry and his cavalry in its rear was put to flight; a portion of the latter only after a hand to hand engagement with the Rangers had attested their superior skill in the use and management of pistol and horse."[2] In this charge, the Confederate Colonel, afterwards Lieutenant-General, N. B. FORREST was wounded. General WM. T. SHERMAN'S reports confirm the flight of our men.[3]

I have purposely refrained from quoting a number of books written by Confederate cavalrymen or their friends. These writings have given most positive testimony in favor of the revolver, but I have preferred not to use them, fearing that their somewhat one-sided character might prevent a free and cordial discussion of this question. I will simply mention two instances of the use of the revolver, given in "Scott's Partisan Life with Mosby." The first is a fight at Myerstown, Virginia, on November 18, 1864, between a squadron of Federal cavalry under Captain R. BLAZER, 91st Ohio, and a detachment of Confederate cavalry, under Major RICHARDS. The Confederates, using revolvers, defeated the Federals with a loss of twenty-four killed, twelve wounded, and sixty-two prisoners and horses; and with a loss to themselves of one killed and one wounded. The statement of the Medical and Surgical History of the War is that the Federal loss was sixty and that the Confederate loss was ten, in killed, wounded and missing. Again there is a fight mentioned, one hundred on a side, where the Federal loss was twenty-six killed and wounded, and fifty-four prisoners and eighty horses; the Confederate loss, nothing. The nearest to a verification in the list of engagements in the Medical and Surgical History of the War is the action at Drainesville, Virginia, on February 22, 1864, between MOSBY'S men and a detachment of the 2d Massachusetts Cavalry, under Captain J. S. REED. The Federal loss is here given at ten killed, seven wounded and fifty-seven missing; the Confederate loss, two killed and four wounded.

1. Rebellion Records, Vol. XX, Part 1, Reports.
2. Same, Vol. X, Part 1, series 1.
3. Same.

Owing to the efforts of several officers and the enthusiasm of the infantry our army is now an army of marksmen — the best in the world. But as a result of it all, the ambitious trooper finds himself in an anomalous and mortifying position. Gold medals and high honors are prescribed for rifle firing, but the cavalryman's weapons are forbidden from military matches and competitions. No encouragement is given to the cavalryman who perfects himself in the use of his distinctive weapons, but his honors must be obtained with an infantry rifle; he must lie on his back with an infantry gun-sling strapped over his knee — his horse perchance a thousand miles away. This state of things is largely due to the indifference of our cavalrymen themselves. Unlike the troopers of every other land we are content to follow in the paths where the infantry have shown the way. If we had not accepted these methods as right and proper for our arm, we would long ago have had systems and matches and methods of our own. Unless we ourselves establish the fact that we have a part of our own to play and that we are able to assume it, it is probable that our country will discover that she does not need the expensive luxury of a cavalry, in numbers equal to one-fourth the peace establishment. Such an event has occurred within the memory of living cavalry officers.

The revolver is necessarily an officer's weapon. Of course no one would think of using the officer's sword in a scrimmage; it is but a badge of authority, almost as worthless for offense or defense as a field marshal's baton, which by the way is but a memory of the war club and mace. The officer finds it to be out of the question to carry a carbine or rifle, but he needs a far-reaching handy weapon with which he can enforce his orders or take a hand in any little fracas within a radius of a hundred yards at least. A case in point occurred during the Apache outbreak of 1872, in Arizona, when an officer at fifty yards, killed an Indian who was in the very act of knifing a soldier. Such an emergency may never occur in any of our lives, but it is the duty of every officer to keep himself prepared for the moment when his very best efforts will be called for. Thousands of men can throw a stone or a base-ball with accuracy who could not place a revolver bullet to save their lives — yet the muscular action and the practice required are about the same. The truth is that most people who carry a revolver are content with a knowledge of its power, without an idea as to the method of commanding that power for their own use. A revolver in such hands is about as awkward and dangerous a plaything as a locomotive engine would be in the hands of one ignorantly attempting to "run" it. Witness the Chicago police shooting into a crowd of anarchists at close revolver range, and the number of innocents in proportion to the number of anarchists hit. Witness similar cases in almost every daily paper. How often we hear of desperate encounters between individuals who empty their revolvers at each other at a couple of yards distance.

The revolver is far from perfect. General KELTON's improvements show where the greatest changes should be made. The uniformity in size of the stocks furnished with revolvers is a source of much trouble. Every man who has a revolver furnished him should have his hand fitted to the stock. General KELTON proposes radical changes in the shape of the stock, all perhaps in the right direction if we use the Smith and Wesson. I have always preferred a Colt; the stock whittled and filed so as to fit the hand and allow the thumb to be extended on the left of the hammer.

One of the hardest things to learn about the revolver is the manual of cocking the piece in rapid firing. General KELTON proposes to obviate this by some changes in the form of the hammer. Cowboys frequently file off the notch of the tumbler so that the full motion of cocking will not be necessary. The principle of rebounding locks, whereby the hammer would reach a full cock after each discharge, would settle the question, but some people would claim it would make the weapon too dangerous.

The Smith and Wesson has defects in the trigger pull, tempering of the small parts, recoil and complicated arrangement. I think expert shots in this country prefer the Colt for close shooting. The Colt perhaps possesses an excess of power. It has a penetration in white pine of two and a quarter inches at 300 yards—a penetration of one inch corresponding to a dangerous wound. Too great power of this kind would encourage firing at long distances and would diminish "stopping" power at short distances. "Stopping" power must not be measured by penetration. To get the former we must add to the mass and decrease the velocity of the bullet, but neither must be changed sufficiently to impair the accuracy. Hence we see a very delicate adjustment is necessary.

The multiball cartridge seems to have been condemned by the Ordnance Department on the grounds that it is no better than the single ball at distances up to twenty-five yards, and that it has not sufficient power at distances over seventy-five yards. The experiments gave excellent targets at seventy-five yards, a single cartridge doing the work of three so far as accuracy goes, with just the right amount of dispersion. At this distance it gave a penetration of about one inch in white pine. The Chief of Ordnance and the Board of Ordnance Officers do not regard these results as satisfactory, but whether on account of poor results at greater distances, I cannot determine. Certain it is that seventy-five yards is the limit at which the revolver should be used by a mounted man, and all experiments should be conducted with the view of making the cartridge efficient within that range. While the dispersion of the multiball cartridge is hardly to be noticed at twenty-five yards, this very fact may

make it of great service to us. It seems probable that the battering effect of three bullets in the same place will be immensely greater than that of a single larger bullet, while the penetration and deadly effect will not be so great.

At twenty-five yards our missile must positively "stop" an adversary; no man with a mortal wound must be allowed to kill several enemies before he succumbs, as is frequently the case when small caliber revolvers are used. The English on this account distrust even our American revolvers. A large number of their officers use great double-barrelled pistols, horse-pistols, four-barrelled derringers and the like, with an express bullet. The four-barrelled Wilkenson, we are assured by Major KITCHENER, would drop an ox. I do not know of any measure of stopping power that has been adopted, but a different measure of efficiency with rifles and revolvers is necessary. In old days it was no great feat to knock over a buffalo with your Colt's revolver, so I would judge it to be satisfactory in that regard. Good results with the Colt's barrel shortened two inches, the round, soft ball and smaller charge, can be obtained up to fifty yards. These are well-known expedients, adopted by experts who are liable to have use for their weapons at close quarters.

A report by General JOHN C. KELTON, in 1881, gives some results as follows: "Eight men out of three companies in the division made sixty-three, seventy-four and ninety per cent. of hits with the pistol at the gallop; six shots advancing from one hundred yards, and, reloading, six shots in retreat, in one minute and fifteen seconds." "The best individual score with the pistol mounted, firing six shots approaching at the gallop between one hundred yards and ten yards of the target, then reloading and firing six shots in retreat at the gallop was seventy-two per cent., and of hits ninety-five per cent." These results were obtained after ten day's practice.

The remarkable exploits of cowboys with the revolver are well known—such amusements, for instance, as knocking off insulators from telegraph poles while running by. The shooting of the celebrated Lieutenant TURNER, of the 10th Cavalry, is often mentioned in the army. This man, with a pistol in each hand, and without looking at his sights, would write his initials in bullet holes at ten paces. Such, with the other deeds of dueling days, and the later attainments of CARVER and BOGARDUS, as snap shots, show the wonderful proficiency that can be reached with such a weapon as the revolver.

Marshal SAXE is credited with saying that: "Military men of all others, are the most tenacious of existing follies, and most averse to change." Reading the story of cavalry, its triumps and defeats, we realize how true the solid old marshal's maxim was. We then see how often great military successes have followed the greatest innovations; we

remember with what disgust the first use of "villainous saltpeter" was received; we smile at the arguments offered only twenty-two years ago against the breech-loader, and we notice the great similarity between these arguments and those now advanced against the revolver.

It will soon be acknowledged that the cavalry of to-day is handicapped by its arms as much as were the iron-clad knights at Cressy by their armor. Here in our country we have broken so often with the hard and fast rules of war on sea and land, we have so few of venerable memories to retard our progress, and we respect so little the moth-eaten and rusty beside the original and new, that the future of the man on horseback is brighter here than elsewhere. Now, the question is, whether upon the ruins of old tactics, arms and organizations, a new cavalry will be raised, proud of old traditions, though discarding them, ready and able to be "in fortune's cap" the very feather.

DISCUSSION.

BY CAPTAIN C. C. C. CARR.

Judging from the papers by Captain HALL and Lieutenant SWIFT on the substitution of the revolver for the saber, it would seem that the advocates of this radical change in the armament of the cavalry are thoroughly convinced, in their own minds at least, of the advisability, necessity even, of making the proposed change.

While I recognize the zeal and ability with which the special plea for the revolver has been made, yet I feel compelled to say that I do not think the arguments and instances by which it has been supported are such as to carry conviction to the mind of anyone conversant with the history of the cavalry arm.

Had we been furnished with one solitary example of a case in which well-organized, instructed and disciplined cavalry, relying upon the saber alone, had been defeated and routed by one its equal in every other respect, but depending upon the revolver for its success, we should feel more confidence in the asserted superiority of fire arms to cold steel in mounted action. Not only has no instance of this kind been given us, but we venture to assert that not one such can be found in the history of modern wars.

If ever the revolver had a fair trial it was during our late Civil War, when it was in the hands of men who were more familiar with its uses than any other people in the world. While our cavalry was uninstructed and inexperienced the revolver may have been a favorite weapon, but no sooner had our mounted troops begun to learn the use and value of the saber as a charging weapon than the revolver fell into contempt and disuse. The saber not only established its superiority to the revolver in a hundred contests between mounted troops, but finally enabled our cavalry to ride down unbroken lines of infantry, as at Winchester in 1864.

In all well-disciplined volunteer regiments, in the last two and a half years of our war, the orders against attempts to employ the revolver in a charge were almost as strict as those given by FREDERICK THE GREAT to his cavalry, and they required no special efforts for their enforcement, but were cheerfully obeyed, because it was seen by everyone that upon obedience to them depended all their hopes of success.

That the affair at Old Church instanced as an example of the successful employment of the revolver may admit of a very different construction is shown by the following extract from "McClellan's Life of Stuart": "The charge was made in column of fours and with the saber. It was received by the enemy standing in line, drawn up in the road and on either side of it, and with an almost harmless discharge of their pistols. Captain LATANE and Captain ROYALL met hand to hand: the one with saber, the other with pistol, and LATANE received instant death. ROYALL was severely wounded by LATANE'S saber and by the men who charged close by LATANE'S side, and his squadrons were driven into hurried flight. The discipline of the regular service, however, asserted itself, and within a few hundred yards the Federal cavalry wheeled into line in beautiful order, again to receive and again to be broken by the charge of Co. E. A second halt was attended by the same result." It seems to be admitted that the contending forces engaged in this affair were about equal in numbers, and it appears, according to General LEE'S official report, that Captain LATANE was the only person killed in STUART'S command during the celebrated raid around the Army of the Potomac.

When it is remembered that Captain ROYALL'S command was cavalry of the regular army and contained in its ranks a large proportion of old soldiers, well drilled and disciplined, as shown by the account given: that they were armed with revolvers that could deliver six shots as accurately and as rapidly as those now in the hands of our troops; that they were charged and driven from the field, not only once but twice, by sabers in the hands of men taken from civil pursuits only a few months before, but who were good horsemen, we are justified in asserting that the employment of the revolver, instead of the saber, was not only a failure but a disastrous one in every respect.

Had the saber been used we have every reason to believe, considering the character of the troops engaged, the outcome would have been entirely different. The killing of Captain LATANE certainly did not affect the general result, unless by increasing the ardor of his troops, and Captain ROYALL probably owed his escape from death on the field to the sentimental prejudice which existed at that time against the use of sharpened sabers.

As to the wonderful feats of BILL ANDERSON and his Border Ruffians when attacking a body of so-called cavalry, granting the stories to be true, they prove nothing more perhaps, than that they pounced upon a body of men, whose only right to the name of cavalry rested upon the fact that they had horses and were designated upon muster rolls as cavalry. It is extremely probable that they had never worn a saber, or if they had, possessed no knowledge of its use or power: and that, all things considered, ANDERSON might have saved his cartridges and have captured the whole body by taking measures to prevent their dismounting to fight, had he not been inflamed with a desire to "make a killing" of his ante bellum, Free Soil enemies.

We know of similar reputations for dash and destructiveness, made by certain other men farther east, whose only weapons were pistols, who were careful to attack only bodies of raw recruits, or soldiers straggling from their commands, but were prudent enough to keep always at a safe distance from disciplined troops, if possible. The lessons they learned once or twice by accidentally running foul of regular cavalry were never forgotten by the survivors.

The Cossacks and other semi-civilized troops may be expert in the use of fire-arms on horseback at exhibition drills in time of peace, but we have no proofs of the destructive effect of their practice in war; while we do know what a terror the Cossacks have always been, even to the best of troops, when armed with the lance.

So late as 1878, a body of Circassian cavalry, magnificent horsemen and splendid swordsmen, having been armed with rifles and revolvers, to be used on horseback when attacked by the enemy, stood on the defensive until the last man was killed or captured. Having lost all their aggressiveness with their sabers, they never made an attempt to break through the surrounding forces, an attempt which might have resulted in the escape of many of them had they possessed their former weapons.

The American Indians who are classed with the expert users of fire-arms on horseback, would, so long as they remained mounted, inspire little fear in the minds of well drilled and disciplined cavalry, meeting them upon an open plain and attacking them vigorously with the saber, sharpened to a razor edge and needle point. For, it will be admitted by those whose experience would enable them to judge, that the Sioux Indian, on horseback, attempting to use fire-arms, is about as absurd an exhibition of the useless waste of energy and ammunition as could be well imagined. To ride round upon an open plain, lie over on the side of a pony and discharge a magazine rifle into the air, may be interesting as an exhibition of the Wild West order, but can hardly be considered effective work from a military point of view.

It is hardly reasonable to doubt that had our plains Indians been fought when they first became hostile, with the sharpened saber in the hands of thoroughly trained cavalry, lasting peace would have come years before it was brought about by the tactics we have pursued.

Perhaps we should have been spared the memory of the great disaster upon the Little Big Horn had General CUSTER brought his whole command, in fresh condition, with sharpened sabers, to the south end of the Indian camp and charged home, across the level plain, upon the seething mass of men, women, children and ponies, displaying all the confusion incident to the moving of so large a camp. Undoubtedly there would have been peace upon the banks

of the Little Big Horn. Whatever resistance the Indians might have made after such an attack would have occurred at a point far enough away from that spot to admit of their rallying after their dispersion and demoralization.

The several instances of fruitless charges made by different bodies of French cavalry in 1870-71 instead of shaking the confidence of believers in the effectiveness of the saber have only led them to deplore the folly or desperation of the commanders who insisted upon employing cavalry under circumstances condemned by all whose opinions on such a subject are entitled to respect.

If the "proud cavalry of Imperial France went down upon the fields of Floing and Cazal" it will be observed that the infantry, artillery and everything else comprising that part of the French army did not tarry long in surrendering upon the adjoining field of Sedan.

The charging of masses of cavalry over fields filled with stumps, intersected by ditches and enclosed by hedges, upon massed battalions of German infantry lying in security in other ditches and behind other hedges, upon the crest of hills so steep that the infantry had difficulty in [illegible] their summits, shows only that either the superior command had fallen upon such [illegible]s until to bear it, or that the condition of affairs was so utterly hopeless that the destruction of a part of the army was considered less inglorious than continued inaction would be. Even under these unfortunate conditions the French cavalry did reach and pass the eight gun battery. What they might have done had they been properly supported must, of course, remain a matter of conjecture, with the doubt in favor of, at least, the temporary advantage of the cavalry.

"The cavalry in this charge (Mars-la-Tour) came close to the Prussians and without great loss, when it was completely disordered by the numerous obstacles strewn on the ground, biscuit cases, baggage wagons, and camp equipment, hurriedly abandoned by the troops in their retreat." In this charge which failed disastrously the want of success was due to two things: first, the German infantry had not been shaken by artillery fire, and second, that the ground had not been examined previous to the ordering of the charge.

The object in referring to these incidents is to show that the failures of the charges made by the French cavalry were due to something more than the fact that they relied upon the saber and lance for the accomplishment of their object.

We have been led to infer that had they been armed with revolvers and known how to use them, their enterprises would have been generally, if not always, successful.

To this it may be answered that it is extremely doubtful that the morale engendered by dependence upon the revolver would have admitted of such gallant attempts being made at all, even in obedience to positive orders.

The habit acquired by fighting with a weapon which permits the wielder to stand off any great distance from his enemy is calculated to foster an antipathy to coming to close quarters which has often resulted in disaster heretofore and will be likely to do so again.

Viewed from the standpoint of the opponents of the saber, its effective range may be only four and one-half feet but its friends think it is limited by exactly the strength of the morale which governs its action. This morale, although not capable of being measured by rule or weighed by balances has, on hundreds of battlefields, enabled the saber to decide the victory or ward off impending destruction.

Nor is the power of the saber to be measured by the number of its victims, as though a general massacre of the enemy was the only criterion of success in a cavalry charge, but rather by the effect produced upon those who survive its destroying power, that has rendered it so effective a weapon in worthy hands.

Dead men tell no tales, but a thousand panic striken fugitives justifying by their exaggeration of the enemy's prowess their own flight from the field, may diffuse throughout a whole army a feeling of terror that may lead to its dissolution or capture.

If, in the Franco-Prussian war only two per cent. of the casualties were due to the saber and lance we have the comfort of knowing that only about five per cent. were attributable to the artillery. But, while the cavalry took part in very few battles, the artillery played an unusually prominent part in every action great and small that occurred, but we hear nothing about guaging its effectiveness by the number of its victims.

Since the close of our Civil War we have but one instance of good cavalry attempting to charge with the revolver, and that was in the war of 1866. A Prussian lancer regiment in column of fours, formed squadrons successively, as fast as they could get off of the road, and not completely formed, charged an Austrian lancer regiment drawn up in line. The Austrians advanced in line and received the shock with a volley of pistol shots, but were instantly broken, and after a hand to hand struggle lasting some minutes, routed by the Prussians, who held the field, notwithstanding they had suffered slightly greater losses than the Austrians. The morale that accompanied the saber triumphed as usual.

We know how FREDERICK THE GREAT'S military career came near terminating with his first battle, on account of his being carried off by the panic which seized upon his cavalry after they had been charged and defeated by the Austrians.

As an instance of the results obtained by cavalry properly employed, which did not depend upon the number of killed and wounded, take the affair at Medellin, in 1809. The victorious Spanish army in full pursuit of the defeated French under Marshal VICTOR, was turned upon by only five regiments of dragoons and cavalry, and in less than five minutes the whole Spanish force became a disorganized mass, fleeing in all directions, with the loss of all their artillery and eleven thousand men.

At Fère Champenoise, in 1814, Marshal MARMONT'S whole army, horse, foot and artillery, were defeated by the combined Russian and Austrian cavalry, who used only their lances and sabers.

Who will say that exploits rivaling these may not be performed by cavalry in the future, in spite of the breech loader, if it be employed at the right moment and on favorable ground, instead of being sacrificed in making useless frontal attacks upon unshaken lines of infantry, as it was in the Franco-Prussian war.

Future wars may sometimes require cavalry to be employed as VON BREDOW'S six squadrons were at Mars-la-Tour, to hold an enemy in check, by a timely charge, until reinforcements can arrive. Much has been written about the losses in VON BREDOW'S command on that occasion. True the casualties amounted to about three-fourths of his whole command, but they were not due to the breech-loading rifle or cannon either, but to the counter charges made upon his blown and exhausted command, by fresh cavalry, who made up their "butcher bills" with lance and saber, as VON BREDOW had no supports to come to his relief.

His charge covered a distance of about three thousand paces, passed through the French artillery and infantry, the latter not having time to fire a second shot from their breech-loaders, so impetuous was the charge, forced the reserve artillery to limber up, and then returned to his starting point, pursued by French cavalry, with the remnant of his command, two squadrons of which were again ready for duty that same afternoon.

"It is quite certain that the sacrifice demanded from the cavalry in a most critical moment of the engagement was repaid by the complete success of the manœuvre.

"For the fatal attack of the French 6th Corps against the left wing of BRUDDENBROCK'S division was completely checked and never resumed, a proof how much the French troops were shaken by the vehement attacks of a few Prussian squadrons." (BORNSTAEDT.) As an additional result BAZAINE'S retreat was entirely cut off and his force shut up in Metz to remain there until surrendered. Perhaps no more gallant charge was ever made, and but few more important in their results. These six squadrons, charging without due preparation, and without reserves or supports, enabled the German commander with one corps to hold his position against an army of one hundred and eighty thousand men.

The habit of depending upon the saber alone inspires in the trooper a dash and spirit of aggressiveness that comes from the use of no other weapon, unless it be the lance. With the saber in hand the trooper moves forward to the attack knowing that to make any use of it he must get within arm's length of the opposing foe. There can be no halting short of that point, unless to turn and flee. It is human nature to relieve suspense by action, though it may lead straight "down to dusty death." During the slow gaits preparatory to the charge each trooper is on the alert waiting for the signal that indicates increased pace, until, finally, the charge is sounded. Then, with horse at highest speed, every faculty strained, and wild with the fury of excitement, the trooper rushes on and closes with his foe. The effective range of his saber has been attained, and, if he has learned his art, and plies it well, his enemy goes down before him or flees for safety and leaves him master of the field.

No tactics have been yet devised or suggested by which any large force of cavalry using revolvers can charge another, and it is very doubtful that it can be done. For any cavalry to charge successfully the officer must lead it, not get in rear to encourage or drive it. Troop leading is essentially the duty of the cavalry officer. Over rough country, every change of direction made by the commanding officer of a regiment or troop should be conformed to by the command at once without waiting for orders. To permit this to be done the officers must be well to the front where they can be seen. Now, the question arises, can they occupy their position while all the men behind them are holding loaded and cocked revolvers in their hands? I think not. Again, all officers of experience know how difficult it is to preserve, or attempt to preserve, strict fire discipline in the ranks of infantry, and will understand why it would be a hundred fold more difficult, if not impossible, in charging, revolver in hand. The accidental or premature discharge of one revolver would probably lead to a general fusilade along the whole line, as, in the excitement of the moment it would possibly be assumed that the order to commence firing had been given but not heard.

Even with the improvements already made in pistols, such as General KELTON'S and others that may be made in the future, the difficulty of rendering safe the action of revolvers on any extended front of a charging body will make the presence of officers in the position now assigned them, and which are the only ones they should occupy in a charge, utterly impracticable.

With a want of proper fire discipline the charging cavalry might arrive in the midst of the enemy's ranks with empty revolvers. By another one of General KELTON'S devices the pistol can be recharged with six cartridges in a moment, but that one moment, when both hands were engaged, might prove a critical one, and offer the enemy an opportunity of deciding the contest with the saber.

I am prepared to admit that a good revolver in skilful hands may be an exceedingly valuable weapon for the trooper under many circumstances. That it is the deadly, infallible instrument of destruction that it is claimed to be by its admirers and advocates; "That any recruit who cannot hit with it an object the size of a man, at ten yards, three months after he has taken his first lesson in riding, is not fit for the high and honorable calling of a cavalry soldier," I emphatically deny.

My own experience with the revolver, which has been rather extensive, in mounted and dismounted practice would not support such extravagant assertions. I have seen many good revolver shots developed on the target range when all the conditions were favorable; when there was no such excitement as would attend a charge: no flying projectiles and no opposing cavalry coming thundering down with the evident intention of staying long enough to make its mark. Even snap shooting, under such conditions, is very different from keeping up the "petulant pop of the pistol," when directed upon the face of a non-resisting target.

In considering the question of the ease with which skill in handling the revolver is acquired, fortunately we are able to get out of the realm of theory into the domain of solid facts. In the annual target report of the Department of the Missouri for 1887 we find the following results, the best that have been obtained in mounted pistol practice during the year; firing done at the gallop:

At 10 yards,	70	per cent.;	50	men	firing.
" 15 "	17	"	46	"	
" 20 "	54	"	25	"	
" 25 "	49	"	35	"	
" 30 "	52	"	37	"	

Now when we remember that the best shooting represented above has been made under the direction and training of officers who are themselves expert snap shots, who have employed every incentive possible to encourage their men, even to the extent of offering prizes provided at their own expense, we may well ask why have not better results been obtained if the art of accurate shooting with the revolver is so easily acquired that a recruit can learn in three months to hit his man every time at ten yards." As only one-half or three-fourths of the men of the troop have apparently been engaged in this practice, and that individually, not in rank, what are we to think of the remainder who are presumably much inferior in skill to those reported?

I believe in the utility of the revolver as a fighting weapon when employed in its proper sphere, that is, by individuals, by small parties of cavalry when open order fighting is made necessary by the nature of the ground, and I am willing to advocate its adoption as a charging weapon for large bodies when it has been demonstrated that it can be advantageously substituted for the saber, and tactics have been devised which will admit of its being safely and successfully employed, but as neither of these has been done yet, so far as I know, I prefer to abide for the present by the saber, which has never yet failed in the hands of those who have had the courage and the skill to use it properly, and have placed in it the confidence it has always deserved.

The employment of the breech-loader has, by compelling infantry to fight in loose order, given to good cavalry opportunities it has never had before when squares could be formed to resist it.

According to Field Marshal VON MOLTKE, "In modern warfare the long range and destructive fire of artillery necessitates a scattered formation. There will be more frequent opportunities for those brilliant dashes of small bodies of cavalry, in which, by taking advantage of the critical moment, the cavalry of division so often distinguish themselves."

HOME, in his "Precis of Modern Tactics," seems never to have considered for a moment the possibility of cavalry using fire arms in mounted action, and yet he writes as follows:

"The action of cavalry on the actual battle-field is by no means a thing of the past. The use of cavalry with skill at the right moment and in the right numbers has always been considered one of the most difficult problems in war; modern arms have increased this difficulty many fold, but to say that the age of cavalry on the battlefield is past is merely another way of saying that the knowledge of how it should be used is wanting."

BY LIEUTENANT EBEN SWIFT.

MR. PRESIDENT: I think Captain CARR is mistaken in putting the casualties of the saber at two per cent. of the losses in the Franco-German war. According to the best information I have, that figure would be a little over one hundredth of one per cent.

My statement of the incident at Old Church was derived from a conversation with Colonel ROYALL himself, a few months ago. The fight at Cyerwenhood (Trauteuau) can hardly be cited in this discussion of sabers and revolvers, for several reasons: It was a victory of the Prussian lance and not of the saber. The Austrian commander "received" the mounted charge, and thus violated all rule and precedent. The Austrians did not use revolvers at all, but single-barreled, muzzle-loading horse pistols.

As to the remainder of this argument, I am satisfied to let it rest where it is.

BY LIEUTENANT EGGLESTON.

MR. PRESIDENT: The members of the Association will be greatly interested in reading Mr. SWIFT'S valuable paper in the JOURNAL, as we have been interested and entertained in hearing it read here. The query raised by the title, "Pistol or saber," suggested at once, to my mind, the line of discussion which I thought the gentleman would pursue: First, the assumption that the cavalry should be armed with but one of these weapons; secondly, an argument intended to demonstrate that the saber as a cavalry weapon is obsolete and valueless and that the revolver is *par excellence* the arm of the mounted service in modern warfare. He has endeavored to strengthen his position in the discovery and illustration of a seeming antagonism between these two weapons. To obtain a greater prominence for the revolver, which we already have in our service, he disparages and would banish from our hands the saber which has been traditionally and is to-day the most popular and esteemed weapon with the cavalry throughout the civilized world. It is with respect to this feature of his argument that I would make a criticism. In my opinion these two arms are natural allies as cavalry weapons, and while I am pleased to note the merits of the revolver, which the gentleman has so well presented, and of which I am an advocate, I would retain the saber and associate the revolver with it. Indeed, I would retain all our arms, the saber, the revolver and the carbine. Considering the duties that must certainly fall to our cavalry in the event of a war again in this country, the greatness of our territory, its physical features, and the temper of our people, I believe these three weapons are necessary to the cavalry, that it may act in the dual capacity of cavalry proper and mounted riflemen. Our arm has been successful in this dual capacity heretofore, and I am quite certain, that there is a very great number of cavalry officers in our service, perhaps a majority, who are opposed to any change in the present armament further than the substitution of a magazine carbine for the Springfield and the adoption of an improved revolver, neither the Colts nor the Schofield, Smith & Wesson giving entire satisfaction. The pistol has been associated with the saber as a cavalry weapon since the time of HENRY VIII, who gave his cavalry a pistol of rude mechanism, known as the "dag." Although a revolver was made as early as the middle of the 17th century, it is remarkable that no really good and serviceable revolver was ever produced until the time of our Colt in this century, and yet during all this time, the pistol was esteemed as distinctively the cavalryman's weapon. The *revolver* it will be observed, as compared with the carbine and the saber is one of the very latest of cavalry weapons, and in view of the conservatism displayed with respect to military armament, we should not be surprised perhaps, that in the wars of a quarter of a century only, our Rebellion and the three European wars, it has not gained real importance as a cavalry weapon.

Now, that we have the improved revolver which will kill at 300 yards and may be fired eighteen times in about two minutes — that is three rounds loaded and fired — there are cavalry officers, who, without fair trial, would discard it and arm our troopers with the saber and carbine; indeed not a few would take away both the saber and revolver making us simply mounted infantry. Those with whom the pistol is not in favor, assert that it is more danger-

ous to friend than foe. I remember reading an article by a cavalry officer, in which he stated the pistol should never be used in a charge, "for when a horseman like CUSTER could shoot his own horse through the head in a simple buffalo chase, what could be expected of the average cavalryman in the excitement of the charge." I had not heard of this incident before in the life of this gallant cavalryman, but I do know that he greatly esteemed both the saber and revolver as cavalry weapons. It was certainly a mere accident, and as futile for the purpose intended in its citation as it would be for me to attempt to demonstrate that the rifle is not a suitable weapon for infantry because some poor soldier had accidentally shot himself through the head, instances of which could be readily given. Officers opposed to the saber assert that it is a useless burden. Some of them have delved into the surgical history of the Rebellion to present a meagre data of the number of saber wounds treated by our surgeons. I have seen one explanation of the meagreness of the number of wounds reported as inflicted by the saber in that war, to the effect that the sabers on both sides were generally dull, and that a vast number of the wounds, except those made by the thrust, were bruises resulting from blows sufficient to knock a man off his horse. I presume these were recorded as contusions. Perhaps some of our "associate" medical officers will be pleased to enlighten us as to this. But we do not care to contend with this style of argument. We point to the grand results achieved. The surgical history does not show the number killed by the saber, nor the number knocked off their horses, ridden down and trampled to death in the many charges made on both sides—nor the number of prisoners captured.

It was in this war that cavalry operations were projected and carried out on a scale and to an extent which was before unknown, and, "in which," says Colonel FRENCH, "it was first shown to the military world what great and important results could, in modern warfare, be obtained by these bold and swiftly executed operations of cavalry." There was hardly any use to which cavalry was put, that, if successful at all, it did not accomplish most signal and decisive results. Captain LUMLEY, in a lecture before the British Royal Service Institution, a few years ago, stated that "it would be an injustice to cavalry to call the levies raised on both sides during our war by any other name than mounted infantry, but a later expression of approval and recognition of our cavalry comes to us from a more influential authority in the English service. I learn from this same authority that there has been for some years past an influential section of Russian officers, who have been urging the theory that European cavalry, drilled after the old fashioned methods, is unsuited to the requirements of modern warfare, and who insist that the model and example which should be taken, both as to armament and the method of fighting is the American cavalry of our civil war. It is quite certain that European military writers within the past three or four years have found more to notice in the history of the operations of that cavalry than at any former period. What was the armament of this cavalry and how did it fight? *It was armed with the saber and revolver*, and generally the carbine also. This equipped it for its dual function. Its power as an auxiliary to the infantry was greatly increased; it could fight either mounted or dismounted, could operate independently without the protection of the infantry, as it can now, and its independence thus made possible, presented strategic aspects and results which the military genius of that martial people, the Russians, have alone appeared to appreciate fully. In her next war we may expect to see some grand cavalry operations, some great raids performed according to the tactics of America which are so well suited to her enormous mounted force, and the immensity of the territory which will probably comprise the field of operations.

In the limited time to which these discussions must necessarily be restricted, I cannot illustrate, as I would wish, how the sabre, the pistol and the carbine were used by our cavalry in the many combats of the late war, the saber and pistol in mounted and the carbine and pistol in dismounted actions. They acted with boldness and skill in both mounted and dismounted contests, using these three weapons as best suited the conditions of the combat. I shall refer first to some noted leaders on the Confederate side, where the pistol from the first seemed to be a favorite weapon with their cavalry. It will hardly be denied that the mounted force under General MORGAN would have been a formidable cavalry detachment operating in a war with any country in the world. It certainly gave us much trouble. It consisted of about 5,000 men, mostly intelligent volunteers from Kentucky. These men carried a rifle with a bayonet, and one or more revolvers, usually as many of the latter as possible. Two companies—troops—were always told off to fight on horseback. They carried the saber. In dismounted action when MORGAN'S men got in close range, it was the invariable custom to use the revolver. Another cavalry officer of greater renown was General FORREST. His men were armed with a saber attached to the saddle, a revolver and carbine. When he attacked cavalry his advance would sustain the fight for a certain time and then feign a retreat, in order to draw on the enemy and encourage him to follow up. The latter was frequently drawn on till he was assailed at point-blank range by the next line who had dismounted and placed themselves in ambush. I think it is probable the Prussians learned this ruse from us, which they practiced in their last war with Austria.

It is stated that FORREST charged at the battle of Shiloh with the revolver, that being his favorite weapon. Another distinguished cavalry leader of the Confederates was General STUART, a regular bred soldier. I need not mention his daring feats, riding around the Union armies and his bold operations in Pennsylvania. I have the authority of a very careful writer that his men were armed with both the saber and revolver, and that very few of them at first had carbines. When he made the circuit of MCCLELLAN'S army in '62 he had 2,500 men. In 1863 he had 12,000 horsemen. Colonel FRENCH says: "SHERIDAN had 10,000 horsemen under his command armed with the saber, the revolver and the Spencer." They only fought on horseback against cavalry, and then *charged, sword in hand*." As a general rule Confederate horsemen did not wait mounted to meet them, but hastened to dismount and get under cover, using their carbines. When they had no time to execute the maneuvre they made use of their revolvers. In some of these actions the Federals are said to have found to their cost that this weapon was more deadly than the saber. There is scarcely any ground within the districts of active operations which the cavalry, armed with the saber and the revolver, and commonly the carbine also, did not charge over time and again.

The use of the revolver has not been restricted to the mounted fire action of cavalry. In the dismounted action of cavalry where, for example, it is used to aid infantry in enveloping a flank, or where it is required to seize an important tactical point to be held until the infantry can reach the ground, the revolver, in my opinion, becomes a most important and effective auxiliary to the carbine. I assume that the action would take the form of the modern battle tactics. In the final rush what more formidable and death dealing weapon could be placed in the hands of an assailant skilled in its use. This was the use of it made by MORGAN'S men, at times, to which I have adverted. I think Colonel KELTON, of the Adjutant-General's Department, has given the best description of how a pistol should be fired that I have ever seen. He says, "Snap firing is the only kind which men mounted can adopt with advantage." "In firing the eye must see the object and the pistol projected at it and fired, with the same motion and rapidity that a missile is thrown from the hand." "The bullet should leave the pistol just as the thrown missile does the hand: the object at which the projectile is thrown being alone noticed." All the mounted expert pistol shots I have ever seen in the west fire the pistol in this way. Any young trooper of fair intelligence and sufficient aptitude for the cavalry service can be taught an efficient use of the pistol in this manner. Indeed, in the heat of battle "snap shooting" is that practiced with the other fire arms. I do not suppose it will be disputed that the pistol is an appropriate and convenient arm for signalling in outpost duty and for personal defense.

It is said the sword is straightforward and ingenuous. So is the pistol. Its action is like that of the "blow" with the saber: the antagonist is seen. The same type of fortitude, the same passion and impetuosity are moved in the *melee* with the pistol as with the saber, though perhaps in a less degree.

It is the only fire arm placed in the hands of the cavalryman which does not injuriously affect the *morale* inspired by the saber combat. The striking characteristic of the form of action of both these weapons is *personal*, hence these weapons are naturally and appropriately the arms for cavalry. Take away the saber, and cavalry loses much of its dexterity, its intrepidity and its real power. Take away both the saber and pistol and you have a body of horsemen in which there is no action, no dash and no movement, not toward the enemy in any event. The shock action is obliterated from the tactics. You have a force of only fairly good infantry afoot and, mounted, one that is incapable of offensive or defensive action, physically weak, morally contemptible and afraid to ride at the enemy; it should never be accorded the name of cavalry.

Austrian cavalry carry the saber and carbine and part of the mounted force is armed with the pistol. The French cuirassier carries both the saber and pistol.

The saber is in the hand of every German cavalryman and the whole of the mounted force of Russia is armed with this weapon. They carry the carbine also. When it is proven that we cannot enlist men in this country capable of being taught the skilful use of the saber, and a practical, if not expert, use of the revolver, then it will be time enough to heed the arguments of those officers who claim that both are useless, and allowing that they do possess some value, that we are incompetent to learn to fight with either—a view directly opposed to the teachings of our last war. It may happen in time that the pistol may be substituted for the saber. Of this I am doubtful. It certainly would not be wise to do it now. As I have said, I would keep the three weapons. We yet have a lighter equipment and armament combined than that of any European cavalry.

DEVICES BY MEANS OF WHICH EFFECTIVE MOUNTED FIRING WITH THE PISTOL AND CARBINE CAN BE OBTAINED BY THE CAVALRY IN ATTACK.

BY COLONEL J. C. KELTON,

ASSISTANT ADJUTANT GENERAL, U. S. A.

INSTRUCTION for firing the pistol from the horse is well established. It is difficult, however, to analyze the method practiced by the best shots, or to describe it except in a general way.

In the first place, pistol shooting, owing to the unsteady support the hand gives the weapon, should always be according to the "snap" method; that is, the eye is not taken from the object to look along the pistol, nor should any effort be made to align the pistol between the eye and object. The best results are obtained when there is no perceptible pause between quickly projecting the pistol and firing; no attempt being made to look along the barrel to see if it points at the object. The pistol bullet must be directed instinctively, as is the arrow from the bow, or the stone from the sling. The cavalryman must do this first dismounted, for there is no other way of delivering the pistol "blow" when mounted.

The same is true of carbine firing mounted, when the horse is in motion at the gallop.

By the following method great skill is usually soon attained in pistol firing at an object in front, rear, or on either side; when moving or still; when both the firer and object are moving; when firing at an object only seen for a moment, the eye taking only its direction and speed; or when firing with two pistols at two objects in divergent directions and at different distances. It must be admitted by the cavalryman that he should be able to give all such pistol "blows," if possible, and the surprise generally is, if he does not succeed when the following directions and suggestions are carried out:

The first principle to observe in rifle or carbine firing, and especially in pistol firing, is to extend the thumb when holding the handle. It must be extended as nearly as possible in the direction of the bore of the

weapon and the prolongation of the fore-arm, and *not grasp* the handle. This extension brings the thumb along the side of the revolver pistol-hammer, and the inner end of the handle should rest over the little finger. This method of holding gives the necessary and all possible support to the weapon.

Experience has shown that the extension of the thumb along the stock in the prolongation of the fore arm enables the weapon, whether rifle or pistol, to be not only quickly aligned on the object, but, after a little practice, to be thrown into accurate alignment with it from any position without looking at weapon at all.

To make the best use of the pistol the cavalryman, when firing, must, if possible, place his thumb in the prolongation of the fore-arm; this not only to give quicker and truer direction to the projectile, but better control of the weapon when it recoils. The remarkable recoil of the pistol follows from its construction, the point of support in the hand being so much below the line of recoil in the barrel. The objectionable severity of this recoil is much overcome by extending the thumb over the grip as proposed.

The reason for the thumb extension is a physiological one, and found in the fact that thereby is best secured that opposition of the thumb and forefinger which gives the hand its wonderful power of manipulation. In the usual way of holding the pistol, owing to the form of its handle, the best use of the thumb is not and cannot be made; hence the use of one of the most important factors in the nice manipulation of a delicate instrument is hardly called into requisition at all. By the adoption of the thumb-piece on the lever arm of the pistol safety-stop this extension is, so far as practicable, secured.

The "blow" with the pistol should be delivered after the same manner as the "cut over the point" with the foil. To make this cut successfully, it is absolutely essential that the thumb be extended along the grip; it is equally essential, in making the pistol "blow," that the thumb be extended along the handle, in the prolongation of the fore-arm, and as nearly as possible, directly in rear of the barrel. One should no more attempt to sight the pistol than the foil in making a blow; but, looking at the object, give the weapon true direction by the hand — to do which the thumb must be extended on the grip. Although this has been well established, probably ever since pistols were made, certainly ever since they were used in the duel, it is not generally known, and it seems not to have been taken into consideration by revolver manufacturers. To admit it now and in consequence modify the cavalry revolver, will of course, be expensive to manufacturers and to the government; but that it is true and will be of inestimable advantage when done is the opinion and experience of pistol shots. A safety-stop device to the pistol, which

prevents the possibility of an *accident*, and one which requires the thumb to be extended nearly as proposed, has been tried and found to work well.

Snap firing, the only kind which mounted men can adopt with advantage, should begin on foot, at black pasters placed on a canvas target five paces distant.

In firing, the eye must see only the object, and the pistol must be projected at it and fired with the same motion and rapidity that a missile is thrown from the hand, from the same raised position of the arm. The bullet should leave the pistol just as the thrown missile does the hand, the object at which the projectile is thrown being alone noticed.

First, on foot, cock, project, and snap the unloaded revolver at some object not more than 5 paces off, and note, as the hammer falls, where it points. Do this each day, at first some 12 or 24 times, before a shot is fired, till the pistol is found when snapped to be *in line* with the object. Repeat at intervals.

Then place one round ball-cartridge, 10 grains of powder, in the revolver, to be discharged after the fifth snap.

Repeat frequently, always noting where the pistol points when snapped, so as to correct any error in its grasp or projection which prevents it from taking *a line position.*

Then insert two cartridges, two empty chambers intervening. Repeat frequently.

After a few days, three, four, five, and then six cartridges should be fired in succession, at the same time gradually increasing the distance.

In this way good snap *line shooting*, effective in war, will soon be made, and with a small expenditure of ammunition.

As the firer instinctively *feels* the way to throw the bullet (for he must not even glance at his pistol) and acquires skill, the distance from the object should be increased 2 or 3 paces.

At 10 or 12 paces he should, after glancing intently at the object, look away and then fire; with the back to the target, standing in the position of "guard," look over the right shoulder and fire; occasionally fire across the body, the left side being toward the target. This first practice up to 15 yards should be with reloaded shells, 10 and 12 grains of powder, and the round dropped ball, .44 caliber.

As soon as good firing is made at 15 yards, instruction after the same manner, at a 4-inch bull's-eye, with 16 to 20 grains of powder and the 230-grains bullet, should be continued up to fifty yards, increasing the distances of the firing points by 5 paces at a time. Beyond 50 yards the regulation cartridge and bull's-eye should be used up to 100 yards.

Mounted firing with the pistol, reduced charges, should begin as soon as good dismounted firing is made at 15 yards, and be carried on along with dismounted firing, on alternate days or weeks.

The foregoing gives at least an insight into the best method of revolver firing. Its reasonableness will become apparent as soon as tried.

At first rather wild shooting must be expected; but if the practice is begun with reduced charges, the surprise will probably be at the rapid improvement and at the increased interest and the great and immediate skill attained in *mounted* firing; this, after all, is the object desired.

As soon as the possibilities of the pistol are fully recognized, and the cavalry generally accept this weapon for close fighting, the handle will be so fitted to the hand and the hammer so adjusted that it can be used to much better effect than at present.

The devices for bringing about efficient work with the carbine and pistol, mounted, mounted, and rendering the revolver safe to comrades in ranks and reloading it rapidly, are —

First.—The automatic check-rein, whereby the cavalryman can control his horse for brief periods without the use of his bridle-hand.

Second.—The safety-stop, whereby the cocked carbine and revolver can be handled freely in ranks, held in any position by the cavalryman without endangering comrades, whereby the extension of the thumb in firing becomes obligatory, and its opposition to the trigger-finger is secured, thus enabling the firer to give true direction to the "blow" without sighting, and better govern the recoil of the pistol.

Third.—The cartridge-pack, whereby the pistol cartridges are assembled in clusters, in a very secure and inexpensive manner, so that they can all be inserted into the chambers of any of the jointed revolvers at one time.

Fourth.—The carbine detachable magazine, whereby five or ten cartridges are attached to it just in front of the guard and most convenient to the hand for reloading; this while the horse is at the charge and without the rider having to look at what the hand is doing.

Fifth.—The carbine-sling, whereby the carbine can be adjusted closely to the person, muzzle up, in the charge, in a simple and ready manner, and whereon the pistol-packs can be carried in a position for instant use.

THE CHECK-REIN ATTACHMENT.

The check-rein is especially useful for cavalry horses to enable cavalrymen to use both hands in mounted firing while the horses are in motion, and for hard-mouthed or restive horses in general. In their application to the special needs of the cavalry service there should be in every squadron spring attachments of at least three different strengths; out of every one hundred thirty should be limited to a pull of 10 pounds, sixty to 15 pounds, and ten to 20 pounds.

When used on cavalry horses, each trooper, knowing the amount of restraint his horse should have at a gallop, limits his stride to that gait by drawing back the rein upon starting, fixing the curb at the proper point by fastening it over or in any convenient way to the pommel of the saddle, thus effecting the control needed.

It is preferred the buckle which unites the ends of this check-rein should be fixed near the attachment of the left rein, in order to readily adjust it with the left hand.

It then only remains for the trooper with another rein to guide his horse, having both hands free to handle his carbine while firing and loading. By this means the perfect alignment of a cavalry force may be maintained in a charge, where perfect array is absolutely essential for success. The play of the spring affords the horse such movement of his head as not to hamper him in going over uneven ground, in jumping, or in case he stumbles and falls.

With such a check-rein all horses hard to control, or while mounting, when the pressure on the bit is apt to be relaxed, can be brought into subjection, so as to give great freedom to the hands.

The automatic check-rein is expected not only to secure good mounted firing in the charge, by controlling horses and keeping squadrons aligned, but also to be of great service in training cavalry horses to keep, at all gaits, an evenness of stride and length of step which will enable troops to maintain at all times their alignment, so that the service of most guides can be dispensed with, and also a large number of the commands prescribed in tactics which are difficult to hear on the drill-ground and impossible to understand in the noise and excitement of battle. With such a check-rein all horses hard to control in harness or in mounting under the saddle, when the pressure upon the bit is apt to be relaxed, can be brought into subjection so as to give great freedom to the hands and render the office of a groom unnecessary.

A horse unhitched, without rider or driver, with this check rein properly adjusted, will be under such control as to feel no disposition to run, and if he does will be under such restraint as to limit his speed and render it an easy matter to stop him.

The check-rein attachment is preferably fastened to the curb-rein next to the bit, while another curb-rein is held in the hand to guide the horse.

In case the pommel of the saddle is encumbered with the holster, or overcoat, or any part of the accouterments of the cavalryman, placing the check-rein over it may be a very unsuitable adjustment. In that case it can be fastened to the front of the saddle by a very simple device devised by myself.

SAFETY-STOP.

The safety-stop is an attachment for pistol, carbine, or rifle, by which the hammer may be retained at full-cock without danger of discharge when pulling on the trigger alone; and it consists of a pin or stop which is operated by the application of the thumb upon the grip in opposition to the trigger-finger. The danger of unintentional or premature discharge of a weapon is always considerable, and with mounted men using the pistol in hand-to-hand conflict there is always danger to comrades in the ranks by the premature discharge of this weapon, either on account of unmanageable horses, when both hands are needed to control them, or from the convulsive movement of a man who has himself been shot. In order to avoid this danger the movement of the hammer is arrested when at full-bent by a device which, in addition to the nose of the sear catching in the tumbler-notch, renders the combined operation of the forefinger and thumb necessary to discharge the weapon.

As the pistol is ordinarily held with the hand grasping the stock, the thumb will not be placed upon its support; only when the pistol is projected in the act of firing will it be extended and placed upon the lever-arm of the stop, and as it will be in opposition to the forefinger in this position, there will be in the act of firing a firmer grasp upon the weapon, which will steady it and prevent its being pulled off to one side and control its recoil.

In order to discharge the cocked pistol, the deliberate action of a pull on the trigger by the forefinger and a pressure by the thumb on the lever-arm of the stop is necessary; hence, the accidental discharge of the cocked pistol is almost an impossibility.

It is evident the stop can be applied to any gun and should be to the carbine, not only to secure safety to comrades in mounted firing in ranks, but to make the thumb extension imperative, for it is an absolutely necessary position for it in snap shooting.

THE PISTOL PACK.

The pistol-pack presents a means for rapidly reloading the chambers of revolvers; it consists of cartridges secured together so that they can all be instantly inserted and the holding device removed. This pack affords a means by which the chambers of any jointed self-ejecting pistol can be loaded simultaneously and in three seconds. The need of such a pack for certain and rapid reloading is absolutely necessary in war, and especially where the pistol is used in hand-to-hand combat, where success depends upon the rapidity with which it can be reloaded and discharged.

There are two forms of packs; both are constructed upon the same principle.

The pack is durable enough to stand any kind of handling and transportation, and if the parts are preserved they can be used many times.

THE CARBINE DETACHABLE MAGAZINE.

To make carbine firing as well as infantry skirmish firing most effective, it is absolutely necessary that there should be at least a detachable magazine on the carbine and rifle, for the position of the soldier in firing, either on horseback or lying down as a skirmisher, makes it necessary for him to have his cartridges nearer the receiver of his rifle than they are when carried in his belt. Hence a detachable magazine, having five or ten cartridges, is suggested, to be, by a simple locking device, attached to the gun in front of the guard and just under the receiver. Thus attached, the cartridges will not be in the way in manipulating the breech-block, and be in the most convenient place for the cavalryman to handle when mounted and firing at the gallop, or for the infantryman to use when in either the prone or supine position.

It is designed that these cartridges be put up in cases containing five or ten at the arsenals, and so transported and issued to and carried on the person of the soldier. When one case is emptied, it can be instantly removed and another taken from the belt and attached. In this way is provided a practical magazine, which for the time being forms part of the rifle, and which in action may be thrown away after being emptied, but, ordinarily, would be replaced on the belt to be subsequently refilled. The belt will, usually, carry nine magazines.

The advantages derived from this method of supplying cartridges to the military are:

That more can be carried on the person than by any other method.

That the carbine and rifle can be more readily and conveniently loaded from such magazine attached to the rifle, under the receiver, than by any other method, especially in skirmish firing.

This magazine is balanced on the rifle, and is so situated that it does not interfere with its poise and balance. Its center of gravity being in the vertical plane through the axis of the rifle, it will have no tendency to turn it in aiming and firing — a result which must be inevitable when the magazine is attached on the side of the rifle, a position for it which cannot fail to prevent good firing.

In this magazine the wood cannot swell so as to fasten in the cartridges, nor will they fall out by gravity or any ordinary jar when the uncovered magazine is turned with the cartridges heads downward; yet they can be extracted without the slightest pull.

Cartridges so put up will effect an enormous economy in the labor of the Ordnance Department and of the military, for from the time they are put into the magazines at an arsenal they do not need handling till put into the rifle; hence they do away with the use of the present woven belt and the cartridge box. Each magazine is a cartridge box in itself, and for garrison purposes, at a trifling expense, one or two for each soldier can be made most attractive in appearance for dress occasions.

Now the Ordnance Department issues the cartridges twenty in a box; when they reach the soldier they are taken out singly and put singly in his belt, and thence singly carried to the receiver of the rifle. With the magazine they go to the soldier and his belt ten at a time, and from thence under the receiver of the rifle ten at a time. In aimed firing as skirmishers the soldier now, in order to fire seven shots in twenty-five seconds, is obliged to carry four in his mouth, two in his hand, and one in the receiver. With this magazine he can carry ten (practically) in his receiver. Hence it may be expected he will fire ten aimed shots with this magazine where he now fires seven.

It will be possible to issue these magazines on the field of battle, looped on copper wire or strong cord of such length that, if the soldier gets them at a time when he cannot dispose of them on his belt, or in excess of the number he can so dispose of, he can attach them to his person, around his waist or over his shoulder, till it is convenient to put them on his belt.

The locking device for attaching the magazines to the rifle and the belt is strong, effective, simple and economical.

There is now great need felt of some such detachable magazine for the carbine and rifle on the skirmish range; while in action it is all important to render skirmishers more self-reliant and formidable, and the firing line in battle more dangerous.

The merits of the one proposed depend upon the position it occupies on the rifle and carbine, the simple and inexpensive means of carrying them on the belt and attaching them to the rifle, and the means employed to retain the cartridges in their receptacles.

It is probably not necessary to use more than two screws to fasten the locking-plate to the magazine.

A cutting machine and crimping die which will at the same time punch the screw-holes, simple and inexpensive, can be constructed to make the magazine plates as rapidly as nails are made, and when manufactured by machinery and in large numbers will not be much more expensive. The more porous the wood the larger must the cartridge receptacles be to allow for the contraction thereof when exposed to dampness and rain. The magazine for war is preferably made of some light wood, the material and labor costing not more than 15 to 20 cents. But even at that price, throwing away the empty magazines would only be permissible in the heat of battle, when everything gives way to the exigencies of war.

THE CARBINE-SLING.

The carbine-sling is made to contain on the front part eight receptacles for pistol-packs, so that they will be nearest the hand when the pistol is to be reloaded; and the back of the sling contains a double or single spring-hook, into which the carbine, when reversed and the swivel fastened into a special screw-ring in the lower end of the guard-plate, may be forced muzzle up. In this position it will enable the cavalryman to mount his horse without difficulty and without danger, cannot interfere with the arm when the pistol is used, will not entangle the rider with his horse should he fall, and will be in position for use should he be thrown or separated from his horse.

The play of the carbine-swivel is limited to a movement of only five inches, by a stop strap fastened on the inside of the sling and about twenty-one inches from the buckle. The hook should be fastened at about fifteen inches from the center of movement of the swivel, and should probably be covered with rubber or leather, to prevent it from injuring the barrel.

When the carbine is slung on the back the swivel should be detached from the swivel-ring and fastened *in a special ring in the stock*, so placed as to secure its best adjustment.

By this arrangement it is not proposed to do away with the long carbine-boot for carrying this weapon when detached from the sling. It is only a substitute, at times, in lieu of dropping the carbine in the charge with pistols, or on the march, or when dismounted, and in place of hanging it over the shoulder in mounting, no easy task with an unmanageable horse.

The bend of the hook should be so great that the barrel, after entering, will have some play. This will prevent the carbine from jolting out.

In firing the carbine while mounted, it should be detached from the swivel.

While eight or nine receptacles for pistol cartridges may be placed in front of the sling, the number to be carried can only be determined by actual experience. Nine packages of cartridges weigh six pounds six ounces, which may be too much weight on the chest and interfere unduly with respiration. Possibly four packs, twenty-four cartridges, weighing forty-four ounces, may be all that in any emergency can be used. With only four packs on the sling it may be possible to successfully fire the carbine attached to the swivel.

The hook on the rear of the carbine-sling is in connection with the swivel-ring at the end of *the guard-plate*, and is adapted to sling the carbine on the back, muzzle up, to conveniently dispose of it in mounting, at times on the march and at drill, and in the charge with the pistol. Both hands will usually be required to sling the carbine on the back. The entrance to the belly of the hook is slightly smaller than the diameter of the carbine barrel.

METHOD OF LOCKING THE CARBINE TO THE SLING, MUZZLE UP.

Pass the swivel-hook into the ring prepared for it.

Drop the carbine and reverse it till the muzzle is between the shoulder-blades, using the swivel attachment as a fulcrum, and hold it in that position; at the same time pass the left hand, palm outward, between the back and the sling near the hook, and grasping the sling and the barrel force it into the hook.

The carbine is disengaged by the reverse operation.

While no special importance is attached to the method of slinging the carbine, it will, nevertheless, be found a most comfortable and convenient way of disposing of it at times, and when so slung will secure better pistol practice than when it is suspended by the swivel.

WAIST-BELT FOR CARBINE-CARTRIDGES.

This belt contains locking plates, to which any required number of magazines, containing five or ten cartridges, may be instantly attached, in the same secure manner as they are to the carbine, and can be instantly detached for use on the carbine.

The following order of instruction with the automatic check-rein and the reloading device for the pistol and the carbine-cartridge magazine in single rank, close order is suggested:

First.—Several drills, without arms, with the check-rein attachment, at all paces.

Second.—Advance at the walk, halting at 20 yards, and aim and fire the carbine with blank cartridges.

Third.—Advance at the gallop, halting at each 100 yards, and aim and fire the carbine with blank cartridges.

Fourth.—Advance at the walk and gallop, with the carbine slung muzzle up or carried in the boot, firing the pistol with blank cartridges without halting.

Fifth.—Advance at the walk and gallop, firing the carbine, with ball-cartridges, at targets, commencing at 300 yards, halting to aim and fire, and continue the advance till within 100 yards of the target, noting the number of hits.

Sixth.—Advance at the gallop, with the carbine slung or in the boot, firing the pistol with blank cartridges, noting the number that can be fired by troops in a charge of 100 yards; also the number in a charge of 600 yards.

No aim — no deliberate aim — can be taken when firing snap-wise at the gallop. The projection of the carbine in the true direction of the object and firing are practically simultaneous motions. Hence no command of aim can properly be given. In firing by volley, at the gallop, the only commands are: "Fire by battalion (or company)." "Ready, fire."

Finally.—Advance at the gallop, firing the carbine snap-wise at targets, commencing at 600 yards therefrom, without halting, the carbine detached from the swivel, using ball-cartridges; dropping or slinging carbine at 200 yards distant, and firing the pistol up to 10 yards of the target, noting the number of hits.

MARCHING CAVALRY.

BY BRIGADIER GENERAL W. MERRITT,

BREVET MAJOR GENERAL U. S. A.

EXPERIENCE in marching cavalry commands in this country, establishes the fact that the distances laid down by Europeans as a forced march for that arm (twenty-five miles a day), is no more than well-marched cavalry can accomplish for six days in every week in a campaign. This distance should be marched in from five to six hours, including halts.

A longer time than six hours spent on the road in marching twenty-five miles, is a positive detriment to a cavalry command. Any shortening of the time to less than five hours, depending on increased rate of marching, would probably result in injury to the horses.

It is proposed to state in detail how this march for cavalry should be made.

Cavalry in ordinary marches can and should start on the march, for nine of the longer day months of the year, by half past six or seven o'clock, and for the winter months, about an hour later. This leaves ample time, after a seasonable reveille, for care of the animals, breakfast for the men and packing of the wagons or pack mules.

Every duty of the camp on the march should be performed by trumpet calls, sounded under the direction of the commanding officer. First, "Reveille," then "Stables," "The General," "Boots and Saddles," "Mount" and "Forward." The hour for the first of these, followed at once by the second, is designated in advance and remains fixed.

Breakfast is taken by the men immediately after "Stables."

The "General" and the calls that follow, should be ordered by the Commanding Officer, and sounded by the Orderly Trumpeter, who reports after his breakfast for the purpose.

This is more important than it may at first thought seem. The Commanding Officer must regulate these calls by the state of preparation, which some mornings, depending on the weather and other matters, will advance more rapidly than on others. No one call should ever be sound-

ed until the duties pertaining to the call which has gone before, are completed. If the "General" is sounded before breakfast is over, or "Boots and Saddles" before the camp equipage is packed, confusion, ill-temper and a badly conducted preparation ensue, which will effect the command, worse perhaps than one would imagine, for the whole day. A half hour's delay in leaving camp is better than an ill-conducted rush, which will get the command out of camp at the preconceived hour, but leaves horses and men fretted and uncomfortably packed for the march. Too much attention cannot be given to the tone of a cavalry command for a march. It is not too much to say that of two commands which march with similar outfits, that the horses of that command will best endure the fatigues of the march (all other things being equal) which is in best tone and temper during the march.

In the preparation and start, as well as in the smallest details of the march, the closest supervision of the Commanding Officer must be exercised. As no call should be sounded until the duties of the one which precedes it are practically completed, no one should be allowed to anticipate the duties pertaining to a call. No horse should be saddled, with the exception perhaps of that of the Orderly Trumpeter, until the signal sounds, when all are saddled. It may be necessary for men in the troop to saddle, at the call, horses of men who are at headquarters packing the baggage and mess kits. This should be attended to in the troop, and the details carefully regulated by the troop officers. As soon as the "General" sounds, one or more troop officers should repair to the troop grounds and superintend the details of everything till the march begins. "Boots and Saddles" is the last call sounded at general headquarters until the march commences. Here it may be remarked that "Boots and Saddles," without any preliminary call, is an alarm. It covers the saddling of the horses, forming ranks and mounting, without any other commands from headquarters. On the march, unless orders are in force to the contrary, it covers the same amount of preparation, and is followed by the "Forward" from headquarters, orders having already been given as to the order of the troops in column. It may be remarked that in large commands the preparation, except in the leading battalion, would stop at leading into ranks and standing to horse, as care must always be taken in cavalry that no officer or trooper should remain mounted unnecessarily.

The column in route should habitually be a column of fours. With large commands the double column of fours can be used to advantage. Less than the column of fours should never be permitted on the march of a command greater than a troop, and as a matter of practice, it is believed that even so small a force as a troop should habitually march in this column. In commands not larger than a battalion, an increased distance on the road between troops, depending upon the avoidance of dust, may

be permitted, though the distance should never be so great as to interfere with the compact march, as a unit, of the command.

The active interest in every incident of the march must begin with all the officers of a column the moment the "Forward" is sounded. That officer who throws himself into the saddle and listlessly settles into his haunches for the—to him—dull routine of a march, is bad as an example and useless in control. Better for the command that he should make the march rolled in a blanket in an ambulance. The men should be required to sit up on their horses, and not loll in the saddle. The column of fours should be kept closed, and on difficult roads made to spread out, taking diverging trails about bad places, through brush or over crossings, and to pass ahead of, rather than to rein up and wait to follow in single file, the troopers who have pursued the direct practicable trails. All this requires close attention and activity on the part of the troop officers.

At the end of the first hour the column is halted for from ten to fifteen minutes. This should be habitual, and the men and horses of a command should be trained to expect it. During this halt the saddles should be adjusted and the men should be encouraged and required, if need be, to "Go to the rear," which should not be allowed at other times on the march, unless a trooper is sick, in which case it would generally be better to send him to march with the train, under the care of the surgeon.

If the command starts from camp at 7 o'clock it will be 8:15 before it marches after the first halt, and it will have left to march about twenty-one miles out of the twenty-five for the day. Each hour after the first, the halts should be not longer than five minutes, or better, at the second halt, stop for a minute or two, then move forward on foot, sounding the "Forward," and stepping out briskly. After leading for fifteen or twenty minutes, halt for a minute or two, then mount and move forward at the trot for fifteen minutes, after which resume the walk till the completion of the hour. These exercises repeated each hour of the march, will give a needed variety, lighten the work on both horses and men, prevent saddle sores and chafing, and complete the march, as a short calculation will show, inside the time above specified. The trot can be taken up to advantage for ten or more minutes, twice or oftener during each of the last three hours of the march, so that the hours' march will cover about six miles of the route; nor will the gallop for from seven to ten minutes be found to be an injury, in a well-conducted command.

It is not possible to complete an article on this subject without repeating rules, which, in order to be enforced, must be constantly repeated.

Permit no man to leave the ranks mounted.

Permit no horse to be watered, officer's or private's, save when all are watered.

There is no stream where in watering there is not room generally for

a battalion of cavalry to water, if the officers superintend and require it to be done properly. In larger streams which are fordable, the leading troops should be marched nearly to the further bank and formed "Right and left front into line" before being permitted to drink, thus leaving room for the troops in rear to make a like formation in the middle of the stream and also near the hither bank, so that in a stream eighteen or twenty feet wide, you may have a double column in mass, consisting of from six to eight troops of cavalry, all the horses drinking at once.

In watering at smaller streams the troops should be marched out from the column on each flank for several hundred yards if need be, the precaution being taken to send officers or non-commissioned officers in advance at a gallop to select convenient places for watering, and to direct their troops to these places by signal.

It does not require an elaborate calculation to show how much time is thus saved with a little care, nor need anyone be told how trying it is to the command for the leading officers and troopers of a column to halt on the brink of a stream to quench their thirst, stopping the way for a column of hundreds of dry and dusty-throated horses in the rear, when a little care would permit all to drink at the same time.

My advice to an officer commanding a march is to arrest an officer or confine a trooper who wilfully neglects attention to the smallest details of the march, so necessary to the preservation of the endurance of the men and horses.

The foregoing has been written with the understanding that forage for the horses is carried with the command or obtained at the camps. If the command is to subsist by grazing, the length of the march, as well as its details, must be modified. Not unfrequently in marches on campaign a cavalry command makes an unforseen halt for half an hour or more. In these cases a careful commander will select the halting place as far as may be where the pasturage is best and form in column on the grass, requiring the horses to be unbitted so that they may graze with facility. During war an enforced halt of this character near a grain field or stored forage can be used to give the animals a much-needed feed. A command, large or small, should never remain mounted for even a short halt. A last caution to a cavalry commander accompanied by a train is, never to permit a wagon to leave camp or to occupy the road until the command has marched.

FORCED MARCHES.

Cavalry in exigencies can march for from three to five days at the rate of 50 miles in 24 hours. A single march of not to exceed 100 miles can be accomplished in 24 to 30 hours. The manner of marching in making forced marches must depend on the total distance to be made. If the

distance is not more than 100 miles, the usual halts at the end of each of the first four or five hours must be made as in ordinary marching, and during the entire march which should be made in 30 hours or less, there should be not less than two grand halts to feed and refresh both horses and men. In these, which should last for two hours each, the horses should be unsaddled and permitted to roll and feed or lie down as they prefer. These halts should be made on the completion of the first and second thirds of the march, depending on the advantages of water and otherwise fit stopping places.

If the distance to be accomplished is more than 150 miles, the forced march should commence at the rate of not to exceed fifty miles for each day, and beyond 200 miles, the marches should be reduced to forty and even thirty miles per day.

These marches, it is hardly necessary to say, refer to commands of horses and men which are in the best possible condition for marching. This condition in garrison is obtained by subjecting a command to the usual garrison duties and daily mounted drills, in the absence of which there should be at least two hours exercise on the road for the horses of a command. Easy campaign marches of from ten to fourteen miles per day, are good in preparing both horses and men for forced marches. Without this preparation, a command will not be able to make the marches, either campaign or forced, and an attempt to accomplish even a portion of the distances mentioned must result in the destruction of a cavalry command through disabling or killing the horses.

The following, as illustrations of forced marches, are extracted from different sources as being of interest on the subject; it should be remarked that the instances are not intended as even an approximation to a complete list of the many long distance marches, now of record, especially in our own service; almost every Indian campaign of the cavalry during the last half century had one or more forced marches for long distances which illustrate the endurance and pluck of the American horseman and the capacity of the cavalry for its legitimate work:

"Letters regarding cavalry," by Prince KRAFT DE HOHENLOHE-INGELFINGEN:

"During the battle of Columbey-Nouilly, 14th August, 1870, a squadron of dragoons of the guard, pursued a body of French Chasseurs as far as Toul, and summoned the town to surrender. On the 15th, the guard corps received orders to give up the brigades of dragoons to the 10th Corps, temporarily, and on the 16th, these horsemen took a decisive part in the battle of Mars-la-Tour." The writer says: "We can hardly expect a more rapid march from a body of cavalry, for the distance from Toul to Mars-la-Tour is 32 miles in an air line."

"On the 27th, some of the boldest cavalry officers rode around the

French army, and their reports established the fact that its corps were in the neighborhood of Vouziers. One of these officers must have made on that day nearly 85 miles."

"After the engagements of Artenay and Orleans and the capture of that place on October 11th, the 2d and 4th cavalry divisions pursued the enemy 34 miles to the Sauldre and towards Blois and Marchenoir, where they were met and stopped by fresh infantry."

"We require cavalry to traverse 28 miles per day, for two or three consecutive days. There have been cases where detachments have had to march greater distances in a day. (For instance, the 150 Ulans of Thuringia made 52 or 53 miles on July 15, 1866.)"

"We see our officer's patrols making as much as 84 miles in a single day. In the advance on Chalons, in 1870, the advanced Prussian cavalry divisions made 85 miles in two days."

The following is given as the method of a forced march of 31 miles in the German army for a division of cavalry:

About 2.	miles at a walk, half an hour.
About 2.33	miles at a trot, quarter of an hour.
About 2.	miles at a walk, half an hour.
About 4 5	miles at a trot, half an hour.
About 2.	miles at a walk, half an hour.
About 2.33	miles at a trot, quarter of an hour.
About 2.	miles at a walk, half an hour.
17.	miles in three and a half hours, with half an hour's time for short halts.
Grand halt of two or three hours	
About 2.	miles at a walk, half an hour.
About 2.33	miles at a trot, quarter of an hour.
About 2.	miles at a walk, half an hour.
About 2.33	miles at a trot, quarter of an hour.
About 2.	miles at a walk, half an hour.
About 2.33	miles at a trot, quarter of an hour.
About 2.	miles at a walk, half an hour.
15.	miles in three and a quarter hours, with 30 minutes for short halts, thus making 31 or 32 miles in ten (10) hours.

During this march the cavalry divisions should be passed from formation of march, to that of combat, once each day.

Here are instances of "forced marches" in the Russian service:

"In 1884 two Sotnias of Don Cossacks made 218 miles in three days under the worst conditions as regards roads and weather. On the arrival of the detachment they were inspected by Gen. GOURKO at the walk, trot and charge. The Commander-in-Chief showed himself fully satisfied with

the appearance of the troopers and the state of their horses. The platoons were reduced, however, by six or seven files. Each Sotnia had left sixteen or twenty horses en route, which, for the most part, rejoined during the day and proceeded at once to ford the Vistula. See 'Un raid sur la Vistula, Revue Militaire de l'Etranger.'"

During the Russian Concentration in Bessaratia a brigade of cavalry marched in two days from Kicheneff to Odessa, 110 miles. See "Les Tendences Actuelles de la Cavallerie Russe."

Three Sotnias of Oural Cossacks, marching over roads covered with snow, made 46, 50 and 56 miles each in a single day. See Invalide Russe No. 231, 1883.

In the Russian autumn manœuvers of 1883, detachments of cavalry made 200 and 300 miles in five days.

In our own service there are many instances of long-distance marches, familiar to officers of cavalry experience. Some of the members of this Association having been participants in these marches. These it is not necessary to enter into in detail.

The cavalry of our service owes much to that prince of cavalry officers, General P. ST. GEO. COOKE. Besides being a most accomplished tactician he was especially successful in making long marches rapidly and with most perfect preservation of his horses.

The writer of this had the good fortune to accompany Gen. COOKE as a staff officer in the march of the command in from Utah in the summer of 1861. The command, which consisted of infantry, cavalry and artillery, marched from Cedar Valley, beyond Salt Lake City, to Fort Leavenworth by forced marches, and while the details of the march are not obtainable, it is recalled that the horses of the cavalry and artillery, though little forage was fed, were in better working order on the completion of the march than they were on its inception.

The same accomplished cavalry officer, General COOKE, made many marches distinguished for their success as long distance marches. One recorded in the history of the 2d Dragoons, with a squadron 100 strong, from Lawrence, Kansas, to Fort Riley—a distance of ninety-eight miles—was accomplished in less than twenty-eight hours.*

Our Civil War furnishes many instances of successful distance marches, both by the Confederate and Union cavalry. In fact, a forced march on the part of the cavalry of one army presupposed a like march on the part of the cavalry of the other.

STUART'S Chambersburg raid with artillery and cavalry, 1,800 strong, was made at the rate of eighty miles in twenty-seven hours.

* "I marched with a regiment on large horses, without a single feed of grain, twenty-two miles a day for ninety-nine days."—*Gen. P. St. George Cooke, U. S. A., page [illegible], Journal Military Service Institution of the U. S., No. XVI.*

One of the most successful forced marches of modern times was that made to the relief of the THORNBURG command by a battalion of the 5th Cavalry in the autumn of 1879. Several officers, members of this Association, were participants in that march. The distance accomplished was 170 measured miles. The time from 11 A. M. October 2d, to 5:30 A. M. October 5th. This was at the rate of sixty miles per day for two and three-quarter days. This march is mentioned as being peculiarly successful for, in brief, the following reasons:

First.—The distance accomplished in the time.

Second.—No horses were lost or disabled on the march, and there were noticeably no sore-back horses after its completion.

Third.—The command—men and horses—were in good condition for service at once after the march.

In reviewing the foregoing one is impressed with the simplicity of the problem to be solved in order to march successfully, cavalry or mixed commands for long distances, or for continued marches of the ordinary campaign. Everything is comprehended in the words, *constant care of horses and men.* Too often our horses are sacrificed by the neglect of this. I quote in conclusion from a letter recently received from General COOKE, who says: "Any unusual success I may have had in cavalry marches, I suspect may be attributed to my constant thoughtfulness and attention—my great interest felt in the welfare and comfort of *horses and men*—I fear in that order."

MOUNTED FIRE ACTION OF CAVALRY.

BY MAJOR G. B. SANFORD,

1ST CAVALRY, BREVET LIEUTENANT-COLONEL U. S. ARMY.

I DESIRE to invite the attention of the Association for a few moments this evening to some remarks upon the use of the carbine and pistol on horseback; to discuss the question whether such use is advisable at all, and if so, to what extent and how far it should take the place of the saber and lance.

The U. S. Cavalry is at present armed with the saber, carbine and pistol—the two latter breech-loading fire arms, the ammunition contained in metallic cartridge cases.

It is to be taken for granted that we are to use all these arms in some way or other, and it would seem that definite rules for their use should be laid down by the proper authority.

The fact that widely different opinions as to the proper use of each arm, and in some cases as to whether the arms are useful at all prevail, makes the subject a difficult one. The rapid improvement in fire arms since the introduction of rifled weapons, which is still going on, seemed at one time likely to lessen greatly the value of the cavalry arm. The wars of the last quarter of a century have dissipated that theory, but have led to a great deal of discussion as to its proper use. As regards the great value of its work as a screening and reconnoitering force there is no question. As to its value as a dragoon force, opinion in this country has been favorable, but has not yet obtained very general acceptance in Europe. As to whether it can hereafter appear in heavy masses and by charging in line or column affect the fate of battles, is still a matter of doubt, to be determined only by future wars.

Modern cavalry may be loosely divided into heavy and light cavalry; the former armed with pistol and saber and, in some cases, with the lance; the latter, with pistol, saber and a carbine. In most of the continental armies the carbine has been added to the equipment of the heavy cavalry, so that the two bodies are practically armed alike; the principal difference being in the weight of the men and horses. This is notably the case in

the army of Russia, where within a few years, all the lancer regiments, except a few in the Imperial Guard, have been converted into dragoons.

The universal acknowledgment that a fire weapon is necessary to the cavalry being recognized, the question arises as to whether its use shall be confined to the carbine on foot, or the carbine or pistol, or both, shall also be used mounted. Looking back at the action of cavalry from the introduction of fire arms to the present time, we find that their use on horseback, though often resorted to, has been in the end generally condemned, and that during those periods in which mounted fire has been most taught and practiced, the cavalry has accomplished least and been at its lowest point in public estimation. On the other hand, under the influence of such reformers as GUSTAVUS ADOLPHUS, FREDERICK THE GREAT, SEIDLITZ, MURAT and others, who steadily forbade such use, it attained to great celebrity. Early in the sixteenth century the petronel, the first fire weapon used by cavalry, was abandoned and the arquebus or wheel lock substituted. The petronel was in reality a small hand cannon, fired by a match; the stock rested against the cuirass and the muzzle was supported by a crotch which stood up from the pommel of the saddle. The wheel lock was a considerable advance on the petronel, but was very soon replaced by the pistol, which is generally used by the cavalry, and is known to have been used by the German Reiters, at that time the foremost cavalry in Europe, as early as the battle of St. Quentin in 1557. The system of the Reiters seems to have consisted in forming in squadrons of from ten to sixteen ranks in depth, and riding up within range of the enemy at a walk or trot. The first rank then fired two shots each, whirled outward from the centre and formed again in rear of the last rank, where they reloaded their pistols. The second rank took up the fire as soon as unmasked by the first, and so on throughout the column. This gave considerable weight to their fire, but it was soon overcome by the French cavalry, which adopted the custom of charging in upon them at speed with the saber, and generally succeeded in fouting them.

Later in the century a custom arose of drawing up the cavalry in two lines, with a considerable interval between them — the first line armed with pistols delivered their fire, wheeled about and retired around the flanks of the second line, which then charged home with the lance or saber.

About the middle of the sixteenth century the carbine came into quite general use, and very much the same tactics were employed, but in all, or nearly all the instances of which we have any record, the carbiners seem to have been easily defeated by the regular cavalry. MOTLEY in his "Rise of the Dutch Republic," gives a notable instance of this kind at the battle of Mookerheyde in 1574, where the carbineers of Count

LOUIS of Nassau, after defeating the Spanish carbineers, were charged by the cuirassiers and lancers, while wheeling to reload, and utterly destroyed.

So in 1590, at the battle of Ivry, the German Reiters, after delivering their fire were retiring to reload, the French cavalry seized the moment to charge, drove them back in confusion on their second line of heavy cavalry, commanded by the DUKE OF MAYENNE, which was thrown into such disorder that they were unable to charge with any effect, and the battle was won by HENRY OF NAVARRE.

In the seventeenth century, GUSTAVUS ADOLPHUS, the great king of Sweden, appeared upon the scene and introduced many beneficial reforms. The cavalry tactics, as he found them, were of the very clumsiest description; the squadrons of great depth, the men heavily armed and equipped, scarcely able to move out of a walk, and relying almost entirely upon their fire arms. The Swedish king reduced the depth of the squadrons, at first to four and afterwards to three ranks. He directed that the front rank, after firing one volley from their pistols, should draw sabers and charge, instead of retiring to reload. After charging, they rallied to the rear, and the second, third and fourth lines followed in the same manner. This fire action seems, however, to have been only a compromise on the king's part with the previous disposition to use fire-arms only. He constantly inculcated the use of the saber in hand to hand conflict, and taught his troopers that it was to a proper use of that weapon that they were to look for success.

In 1643 the great CONDE still further revived the credit of the cavalry service, and especially by his conduct at the battle of Rocroy, which was gained almost entirely by the action of the cavalry led by CONDE in person, in a series of terrific charges.

Two years later, CONDE came near suffering a very serious defeat at the battle of Nordlingen, owing to the directly opposite action of Marshal GRAMMONT, who at that time commanded his cavalry, and who received the charge of the enemy's cavalry with a carbine fire at a halt. DE GRAMMONT was routed and pursued in utter disorder, and only by the most vigorous exertions of CONDE was success obtained.

In the early part of the 18th century, Marlborough's cavalry, under Lord CUTTS, during the battle of Blenheim, were attacked by the French carbineers, firing mounted. CUTTS charged them with the saber, the forces being about equal and easily defeated them. Later in the same battle Marshal TALLARD directed a force of over ten thousand French cavalry to make an effort to retrieve the fortune of the day, but as they again attempted to resist Marlborough's cavalry by a mounted carbine fire at a halt, they were ridden down and a large proportion, including TALLARD himself, were forced to surrender.

CHARLES THE TWELFTH and Marshal SAXE continued the efforts now being made to make the cavalry a more mobile and active force, but it was reserved for FREDERICK THE GREAT to bring the cavalry arm to perhaps the highest state of efficiency it had ever reached. His first great change according to DENISON was to prohibit absolutely the use of fire arms mounted, and to compel his troopers to rely entirely upon the use of the saber in the charge at full speed.

The world was soon ringing with the fame of his horsemen, and out of twenty-two great battles fought by FREDERICK — NOLAN declares, that fifteen were certainly won by his cavalry.

It was not "fire action mounted" that gave the cavalry this masterful position, for FREDERICK had positively prohibited it and Major General WAR, one of his best officers, after SEYDLITZ and ZIETHEN, says distinctly: "Experience has convinced me on more than a hundred occasions, for I have never seen a squadron depend upon its fire, that it has not been overthrown by that which came upon it, at speed, without firing."

In the latter wars of the 18th century, we find no advance upon the ideas of FREDERICK. In the American Revolution the cavalry force of either side was small in number and its duties chiefly of a partisan nature. In the battles of that conflict, it exercised little influence on the result.

The same may be said of the early battles of the French Revolution, and it was not until NAPOLEON was firmly seated on the throne, that the cavalry, again conforming to the maxims of FREDERICK, SEYDLITZ and ZIETHEN, took its proper place.

"NAPOLEON," DENISON says, "had a very high opinion of the cavalry service, and understood thoroughly all the various phases of its duty. No man knew better the importance of light cavalry for covering the movements of an army, and for searching out, and watching the marches and designs of the enemy. He soon changed the system of organization in the French army and gathering together the scattered regiments of horse, formed them into brigades, divisions, and finally, into corps d'armee. The troops were taught to depend on the saber and lance, and even the dragoons and carbineers were principally employed as light cavalry though they occasionally dismounted to fight on foot. We have no record of their ever using the carbine on horseback, and towards the close of his reign many of the dragoon regiments were converted into lancers — the lancer at this time increased in popularity and attained great importance as a charging weapon. From the peace of 1815 no new principle was introduced involving the action of mounted troops, until the introduction of breech-loading arms."

During the great Civil War in the U. S., the cavalry were generally armed with the breech-loading carbine, Colt's or Remington's revolver and the saber.

These fire arms, however, were by no means equal to the arms now in use, being supplied with paper or muslin covered cartridges, and fired by means of a percussion cap.

The infantry, with the exception of a few regiments armed with the Sharp breech-loader or the Spencer magazine gun, fought out the war with the old muzzle loading rifled musket. In the charge the saber was generally used, and more especially by the cavalry of the Army of the Potomac. In outpost skirmishes and affairs of small parties, the pistol was often used in the charge. The Confederate cavalry were more especially given to the use of this weapon. Both sides used the carbine on foot to a great extent, being compelled to in the first instance by the nature of the country, which was generally rough, covered with high stake and rider fences, or stone walls, and often densely wooded. Another reason for the great use that was made of the carbine, is doubtless the fact that the volunteer cavalry, in the early days of the war had not yet acquired sufficient confidence in themselves as cavalry to attempt mounted fighting. This is illustrated by the fact that pretty nearly all the saber charges during the first year's fighting were made by the regular regiments, which, of course, cherished a traditional fondness for that weapon. As instances, I can mention the affair at Fairfax Court House, under Lieut. TOMPKINS, of the 2d, or as it is now known, 5th Cavalry; the charge of the 1st Cavalry, under Col. GRIER, at Williamsburg, and of the 2d Cavalry, under Captain, now General MERRITT, at Beverly Ford. Later in the war this distinction in a great measure ceased to exist, and there were no more gallant charges than were made by the volunteer regiments and brigades. I allude to it simply to draw attention to the circumstance that as our cavalry improved in drill and gained in experience, their course was not in the direction of mounted fire action, but of the use of the saber. Where it was necessary from the nature of the ground or for other reasons to fight on foot, they fought on foot and used their carbines to good purpose, but when the conditions permitted mounted fighting, the carbine as a rule remained in its socket, and the men drew saber. It is only necessary to point to the action of the 1st and 3d Cavalry Divisions at Winchester, Cedar Creek, Woodstock and the Five Forks campaign to prove the truth of this assertion.

In the great valley of Virginia during the campaign of 1863 and in several battles of the campaign in the Shenandoah in 1864, there were many occasions where our cavalry had a clear field, but in none that I can remember did they use the carbine mounted, though the pistol was used occasionally and the saber often. In individual instances, outpost skirmishes, encounters of small advanced parties, &c., the carbine was occasionally used. Also in advancing with the heads of columns covered by a

force of mounted skirmishers, the carbine was often employed to hasten the retirement of the enemy's skirmishers, or to cover our own retiring forces when the conditions were reversed. I remember some very effective work of this kind by the 1st and 3d Cavalry Divisions, in the valley near Kearneysville, in August, 1864. The cavalry corps, in moving out on a reconnoissance, had run up against, not only the Confederate cavalry which was to be expected, but a very large force of Confederate infantry, advancing towards the Potomac under General EARLY in person. It was of course necessary to fall back, and long lines of mounted skirmishers covered the retiring columns and by their fire succeeded in keeping the Confederate infantry at a fairly respectable distance, and enabled us to save our trains and artillery, though one brigade under CUSTER was cut off from the rest, and forced across the Potomac at Shepherdstown. In this case, the mounted fire was certainly valuable, and perhaps the only thing that would have succeeded. The enemy's forces included RHODES', RAMSEUR'S, GORDON'S and WHARTON'S divisions of infantry, with cavalry and artillery, and was so immensely superior in number, that an attempt to detain them, by dismounting to fight on foot, would certainly have resulted in the capture of the dismounted force, which would have been surrounded by the overlapping flanks of the infantry. The country was not suitable for a charge in line, and even had it been, the loss in the charging force would have been extravagant as compared with any advantages likely to be obtained. As it was, the enemy was kept at a reasonable distance during the movement, the morale of the force was not injured in the slightest degree, and the object of the reconnoissance was fully attained. Of course if an enterprising cavalry command, sufficiently strong in numbers to make an impression, had been present, the disposition would not have answered, but as it happened, the main force of the Confederate cavalry, under General FITZHUGH LEE, was otherwise employed, and what there was in the neighborhood, did not think it advisable to press us.

In similar cases advancing or retiring, a cavalry force might occasionally accomplish its object with more facility, than in any other way. With such possible object in view, there is, in my mind, no question as to the propriety of drilling the men in the use of their fire arms mounted, but it should be fully understood that such use was to be exceptional, and that their main dependence would be the saber when mounted.

FREDERICK THE GREAT, although so bitterly opposed to firing in line mounted, that he ordered that any officer authorizing it should be immediately cashiered, still directed that his troopers should be thoroughly instructed in the use of their fire arms on horseback. His idea seems to have been that any firing in line, tended to weaken the soldiers' faith in the superiority of the charging weapon, and that therefore it was to be

discouraged. His reliance was placed undoubtedly on the lance or saber in connection with the shock, and the shock was not obtainable with the tendency to halt to aim, which the act of firing a carbine mounted, induced.

An instance of the determined use of the different weapons employed, once came under my observation towards the close of the war of the Rebellion. A squadron of the 17th Pennsylvania Cavalry, was ordered from Winchester to Martinsburg, Va. When about half way and while marching in column of fours, having just passed the village of Bunker Hill, the squadron was attacked by an apparently equal force of MOSBY'S cavalry. The latter were drawn up in line along the edge of a heavy woods, about two hundred yards from the road, and poured in a heavy volley from their carbines as the Union cavalry came up abreast. Immediately after, they drew pistols and charged as foragers, firing rapidly as they approached. The officer in command of the Union cavalry took the trot and gained a piece of open ground, on which his advanced party had halted, wheeled into line, drew saber and charged. The defeat of the Confederate cavalry followed almost immediately. Their men had scattered in the charge, and having emptied their pistols, pretty generally, were helpless against the determined charge of the Federal cavalry with their sabers. They retreated in disorder and disappeared in the woods, the whole affair probably not occupying ten minutes, and our loss being confined to a few flesh wounds, and one horse killed. This affair occurred about midnight, but as a full moon was shining and about two inches of snow on the ground it was practically as light as day. Had the Confederates charged with the saber, I doubt whether the Union officer would have had time to form line at all, but MOSBY'S men were not given to that sort of fighting, though like the rest of the Confederate cavalry, they would fight desperately enough in their own way.

The general results of the four years of war in America were immediately favorable to the cavalry force. Its place in public estimation, always high after the organization of the corps in 1863, was never higher than when, largely by its action under its gallant leaders, the war was brought to a close in the spring of 1865. The new principles developed, however, were not in the line of mounted firing, but in the great use which could be made of a cavalry force under *any* and *all* circumstances; in other words, to the fact that they could be made a self-protecting, independent, active force, and that the day had gone by when they could be considered like the artillery, an auxiliary force simply, enormously destructive it is true when properly handled and guarded, but utterly powerless to protect itself when alone. The principal conflicts of the last twenty years, the Franco-Prussian and Russo-Turkish wars have scarcely added to our information in this respect, though they have caused attention to be directed

more than ever before, to the manner in which cavalry was handled in our war. The French cavalry, as a rule, were held close to or in rear of the infantry divisions, and though the Prussian Uhlans, which at first astonished the world by the reckless daring of their advanced parties and reconnoitering forces, were eventually driven to the shelter of their infantry also, it was not by the action of the regular troops of the enemy so much as from inability to close with the franc tireurs, who attacked them from behind woods, stone walls, or any available ambush, and disappeared as soon as any strong party could be concentrated against them.

The German cavalry, who depended almost entirely on their lances or sabers, and rarely used the carbine, even for dismounted fighting, were unable to cope with this irregular force in guerrilla warfare, and their usefulness was, consequently, materially impaired. This fact has not escaped the attention of progressive officers in foreign services, and has led to much discussion, their attention being particularly drawn to the manner in which cavalry was handled on this continent, under similar circumstances, but with much greater success. As this involves, however, the use of cavalry dismounted, it does not come within the range of my subject, but will be treated of by others.

That the pistol is a very much more powerful weapon than before the invention of the metallic cartridge and other later improvements, cannot be disputed. The facility with which it can be reloaded disposes of the objection which existed when the trooper had to fall back to reload. The inventions of General KELTON, probably well known to most of the officers present, still further increases the efficiency of this arm. Whether they will result in making it the principal charging weapon of the cavalry, as General KELTON hopes and believes, must be left to be determined by more thorough experiments than have yet been practicable, and perhaps to the actual experience gained in future wars.

Experiments made at this post with the S. S. and Wesson pistol by Captain CARR of the 1st Cavalry, led to the belief that by the automatic check rein, and the cartridge packs of General KELTON, great rapidity of fire, combined with considerable accuracy, could be obtained at a rapid gait. The facility with which the weapon can be reloaded while in motion, by the use of these cartridge packs, gives it an advantage as a charging weapon which it has hitherto lacked.

Experiments with the carbine, mounted, by the same officer, showed that it was impossible to obtain any accuracy with it while in motion. Good target results were obtained, however, by galloping to within 600 yards of the target, halting to fire a volley, then advancing again at the gallop, and so on. It cannot be forgotten, however, that these results were obtained without the counteracting effects of an enemy's fire, on foot or lying down, or the advance of a cavalry command at speed, and

that if it is often doubtful whether cavalry can afford to charge infantry at speed, much less can they afford to halt and begin firing from horseback when within 600 yards of them. The act of halting to fire in the front of a charging force of cavalry, as far as I know, has had but one result, and it is scarcely worth while to discuss it.

The conclusions which I draw from the facts gathered in my reading, and from what little experience I have had during my cavalry service, may be stated as follows:

First—That mounted firing may be advisable under certain circumstances.

Second—That with reference to the carbine, it should be used only on rare occasions, mounted, as by vedettes for the purpose of signalling, or for temporary resistance by small bodies on scouting duty or advanced patrol for the same reasons, and lines of skirmishers when necessary to force back a retiring line, or to cover a retreat which was being too closely pushed, and where a charge with the saber was manifestly unadvisable. It should be used, however, with great discretion, and never used in line of battle under any circumstances.

Third—That the pistol may be made a valuable weapon for the charge in line, as it already is recognized to be for a charge as foragers, or for individual use, but that further tests must be made in actual conflict before we can concede that it is a better weapon than the saber for use in the charge by large bodies.

DISMOUNTED SERVICE OF CAVALRY.

BY CAPTAIN J. E. BABCOCK

5TH CAVALRY, BREVET MAJOR U. S. A.

I BELIEVE it to be unnecessary at this late date to consume any time in proving by reference to the exploits of modern horse, both in our country and much more recently in Europe, that fire action, dismounted fire action, is in the future to be fully acknowledged as an important characteristic of light cavalry. In the words of a distinguished English writer:[1] "The experiences of recent European campaigns have irrefutably proved that if cavalry is to be prepared to fulfil all the tasks which, without demanding too much from it, will certainly in future campaigns fall to its lot; the cavalry soldier must be able at any time to fight on foot and do it fairly well." It is, however, a fact, as we read "that up to the time of the Franco-German war the practical importance of this subject was resolutely ignored both in England and on the continent of Europe, and that only recently has it begun to meet with the full, frank recognition it deserves," and it may be useful (for a purpose to be shown presently) to consider some of the reasons why the immense advantage to be derived in making the cavalry soldier self-supporting under nearly all conditions of modern fighting, was not at once accepted in its full extent by European military authorities and writers.

First, then, we find upon the authority of Colonel TRENCH that "British and continental cavalry officers of the old school resented as long as they could the notion of turning the cavalry soldier into what they termed a hybrid creature, as being opposed to the traditions and ideas of the cavalry arm."

The glorious record of the *arme blanche;* the feeling that the soldier drilled in the use of the lance and saber and in horsemanship, should be taught to regard the saddle as invariably his proper place, and Centaur-like, to be inseparable from his horse, did much to close their eyes to the new field of enterprise opened for the cavalry corps.

Again, notwithstanding the fact that [2]"The brilliant and, in some

1. "Cavalry in Modern War."—TRENCH.
2. Ibid.

cases, extraordinary services that large bodies of both the Federal and the Southern cavalry, fighting for the most part equally well on foot as on horseback, rendered to their respective sides, have long been matters of history;" the feeling no doubt existed to a great extent in Europe, that development in the military art could hardly be looked for in the struggle of armed citizens of the Western Republic. It was doubtless conceded that the men were brave and full of zeal in their cause, but with everything of military science to learn on the actual battlefield. Once more, the unmerited name of mounted infantry, which we still find applied to the American war cavalry in foreign text books published within three years, doubtless did much to turn away the cavalry student from a critical study of the achievements of a mounted force, which, at this late day, is beginning to be recognized as the prototype of the ideal cavalry soldier of the future. It is here that the purpose is shown in inviting your attention to the reasons why the subject of the dismounted service of cavalry advanced so slowly into favorable consideration and belief on the other side of the Atlantic. It is to point out that the novel experiences, methods, exploits and successes of the cavalry on this side were ignored, not because they failed to contain lessons and models for the future, but for reasons inherent in the prejudices and training of the cavalry leaders of Europe.

It is a matter of great regret to anyone interested in the subject that it was so; because, doubtless, the subtle flattery of imitation, and favorable criticism of military Europe, would have stimulated the cavalry leaders of our war to a careful exhibit on paper of the principles which they had so recently submitted in the field, to the test of successful experiment.

That they have not given us in detail the methods, time, conditions, etc., under which in their wonderfully successful experiments the saber was exchanged for the rifle and the rifle for the saber, with equal skill in each, is all the more to be deplored, since it appears that in 1871 General VON SCHMIDT, one of the most highly accomplished cavalry soldiers of Europe, could write as follows. Speaking in his "Instructions for Cavalry" of the dismounted service, he says: "We cannot conceal from ourselves that in the last campaign (1870-71) we appeared in the field totally unprepared in this respect." Later, in the same book, he bears testimony to the value of modern methods in the following words: "I am convinced," he says, "that cavalry would not be up to the requirements of the day if we were not able, under certain circumstances, to fight on foot, nor would it be worth the sacrifices that it costs the State. Independent and successful action of cavalry divisions is not conceivable, unless such cavalry is capable of maintaining a combat with firearms, offen-

sive and defensive, by whole regiments." Further, we find that in 1884 the English officer already quoted could still write that European cavalry had so far failed to do, what it is claimed the American horsemen accomplished twenty-three years ago, namely, to use the words of the writer referred to, "act with boldness and skill, both on foot and on horseback." It is true that since 1871, much has been written and many regulations adopted in Europe for the dismounted service, but with the exception of the Russian campaigns in Turkey, no opportunity has been granted to test their methods wherein they differ from those we cherish by tradition, from the fathers of the modern dragoon. In regard to the latter campaigns we are told by General VALENTINE BAKER "that the Russian dragoon, trained to fight on foot and horseback, did not justify the expectation formed for them," and General BAKER's conclusion is that the Russian dragoon "is not good cavalry, and is a very bad infantry soldier." Further, to quote Captain BEEL of the Eighth Hussars, "he (General BAKER) says that both Russians and Turks were absolutely deficient in scouting duties; and the rapidity and range of the infantry weapon seemed to frighten both cavalries out of all idea of vigorous action in the presence of infantry."

Again, we find that the Russian cavalry manœuvers in 1879, in the neighborhood of Warsaw, attracted a great deal of attention in the neighboring continental armies for several reasons. Among others, it was the first instance in Europe, in which a large cavalry force, engaged in manœuvers, attempted to undertake a "raid" after the American fashion, against a far distant point of the enemy's communications. I may have said enough, to show that we are the possessors, so far, of all that there is to learn from that greatest of military teachers, experience in war, in the matter of modern dismounted service of cavalry, and the kindred subject cavalry raids, made possible by the self-supporting character of modern horse. It cannot be questioned then, that it is highly important to collect the result of experience bearing on these subjects. The officers who led and served with the cavalry should tell us just when in any named battle their horsemen dismounted to fight; what were the conditions at the moment; what was the nature of the ground; how taken advantage of; what was the strength and disposition of the guard left with the horses? How did the line retire before superior infantry? How was the act of remounting covered? and many other points of tactical interest.

Surely the most instructive method of study of the important subject, dismounted service of cavalry, would be not to theorize, but to examine in the most critical detail just what has been done. It really makes no difference whatever that the experience should fit the theory, but every difference that the training should fit the experience.

Trustworthy accounts in detail of the experiments in cavalry management from which such great advantages were reaped, can be compared and recorded in tactics. As the manual for the breech-loading mechanism follows the invention, so should the tactics record the results of experience.

I will not attempt, however, in a paper prepared in the brief time at my disposal in this case, any such critical study of the partial record we already possess. I desire rather to confine myself to an examination of some of the characteristics of modern cavalry, and to the detail of a few points in our dismounted practice and tactics, which it would be well for an Association of American cavalry officers to consider and decide promptly, in view of the fact, that the recognition of the value of the lessons taught here, although tardy, is growing in strength and spreading.

The attention of cavalry students of all armies is now, very recently, invited by foreign writers, to close study of tactics, equipment, and results of dismounted fighting and "raids" in this country. It would seem that this Cavalry Association of ours has been formed just at the right time to obtain and preserve before it is too late, the information now alone possessed by our cavalry soldiers north and south, the authors of modern scouting; raiding; and dismounted fighting.

To begin then what manner of man is this modern dragoon, which the experience in the latter part of the Franco-German war, when the Franctireurs compelled the German cavalry to march under the protection of infantry, taught all Europe to look to as the model for the future? In reality the modern dragoon is in no sense a mounted infantryman. The cavalry soldier with all the confidence in his horse and saber, "the love of enterprise, and longing for personal distinction," which we are told should animate the horseman, rides in the saddle, the ever ready infantry support rides in the carbine socket. So accompanied and provided, his characteristic is, Sir HENRY HAVELOCK says, speaking of our war cavalry, "a self reliant all sufficing efficiency." He charges saber in hand the enemy at Winchester, and on foot pushes home the attack and carries the earthworks of the infantry at Five Forks. Again, he can undertake a crusade into the heart of the enemy's country with STUART or SHERIDAN, with a bouyant feeling that no Home Guard at any rate can stop him.

Surely it is apparent that modern horsemen have increased possibilities of corps distinction, when like ships of war at sea they can cruise over wide areas in search of adventure.

It was the possession by our cavalry at the close of the war of the qualities above outlined that justifies the claim made for them, that they are the only exponents so far, in recent war, of the future cavalry soldier, and that their methods deserve close study. In this I do not forget that

General VON SCHMIDT tells us "the drill regulations of FREDERICK THE GREAT for his cavalry required not only that they should be capable of holding positions and villages against an enemy, but that they should be able to master such places as churchyards, etc.," and he adds, "In this glorious period, however, cavalry lost nothing of its true spirit; they did not forget to charge with the *arme blanche*, although they had much more training in fighting on foot than now-a-days, and had frequently to attain their success by fighting in that manner." To this I submit, in support of my previous statement, that as no modern rifle existed in KING FREDERICK'S time to decimate the lines of charging horse at distances which to him would have seemed incredible, the model for future dismounted service and the possibilities before cavalry in wide sweeping raids, would not be found in a study of that great general's tactics and methods.

It may also be pointed out that PETER THE GREAT organized a corps of dragoons and gained a great victory at Pultova by their use dismounted, but they were mounted infantry in reality; their arms consisted of long muskets and sword bayonets and they carried spades and shovels for field intrenchments.

Again, the dragoons of NICHOLAS 1ST were mounted infantry. Eight squadrons of the regiments of ten squadrons were armed with muskets and bayonets and two with lances.

Having thus demonstrated, I hope, that it is the dismounted service of cavalry, not the mounted use of infantry, which we have under consideration, I invite your attention briefly to some points of tactics and equipment.

The able cavalry commander, VON SCHMIDT, has stated for us concisely a principle of our own practice, namely: "We must act with decision from the first, and as many carbines as possible should be brought into play from the commencement." This leads us to consider the question of the number of men dismounting from a troop, and the best method of holding the horses.

The German fashion is as follows: "At the command dismount, all the men of the rear rank dismount, with carbines, and all those of the front rank, who are told off as No. 1 for dismounting. Those of the front rank, who are told off as No. 2 for dismounting, remain mounted and take on their right arm the rein of the front rank No 1 on their right, who turns his horse left about; front rank No. 2 also takes round his right arm and in his right hand the reins of the horses of Nos. 1 and 2 rear rank, which are fastened together and brought to him by No. 1."

In the French cavalry No. 2 holds the horse of No. 1 on his right and 3 and 4 on his left.

In the English service until 1883 only every other man dismounted, now in each section one man holds the horses of the other three.

Another method, proposed by Colonel BONIE, is that the horse holders should be dismounted, in which case he thinks that one man could hold six horses, including his own.

The English criticism of the American method is as follows:[1] "Against this system it is objected * * * that much time is required for linking and unlinking horses, and moreover it presents the possible disadvantage of one horse, if he breaks away, carrying with him one or two others." A careful consideration of this subject leads me to the conclusion that the objection as to time is not well taken; a few drills and practice reduces the time required to form the troop dismounted to a few seconds; fifteen seconds will do it from the command dismount.

In regard to the horses breaking away, a more serious objection of the same character exists to the European method, for should a horse-holder become disabled by a stray bullet, the horses, held separately, might disperse in three different directions, while with us three of the four would remain tied together and be more easily caught up. Another advantage which does not seem to be considered abroad is the better ability to manœuver the led horses. The awkward bunch, head to head, which the German method produces, would certainly seem to be difficult to lead; whereas we can all bear testimony that by our system the led horses can be manœuvered all over the field, at an increased gait, if necessary. It would be well, I think, to authorize the idea of dismounting the horse-holders suggested by Colonel BONIE, when by so doing better advantage can be taken of cover. It can be done at any time after the dismounted men have moved out by merely directing number four to dismount. In the rush for the horses in the remount, number four would mount first, and the confusion be less than if he stood dismounted with all the bridles in his hand, as suggested by the French colonel. I am also of the opinion that it would be an advantage if number three linked his horse to number four instead of taking his bridle over his horse's head and handing it to number four. In this way a troop of led horses, standing in column of fours, under cover, could be held in bunches of four with ease by half the number of horseholders dismounted, each one holding two bunches, the other half being available, with the carbine, on top of the bank as dismounted guard.

Another point in our tactics which we might consider to-night is whether the authority to dismount a line of mounted skirmishers, would or would not be an advantage. In that case, of course, every man should hold his own horse, and advance firing, dismounted.

Is there any lesson in the great school of experience which caused the

1. Elements of Modern Tactics.—SHAW.

movement to be left out of our tactics? The English do it, but not to the extent of each man holding his own horse. Recent experiments in this direction have been made in the 1st Cavalry, the skirmisher holding his horse at the end of a lariat, and some of our members can doubtless give us the result. That the soldier can hold his horse and fight dismounted, we have seen illustrated in Indian skirmishes; but the danger to be apprehended in civilized warfare would of course be the charge with the saber of the enemy's skirmishers, while ours were in the act of mounting or dismounting.

In one respect our tactics for dismounted service are sadly lacking, and that is in the fighting formation of the men after dismounting. We look to the details of our former experience for instruction in the possibilities of dismounted service; what it should be expected to do, based upon the story of what it did. But since our war the art of fighting infantry in dispersed order has become a special and important study. Many accomplished officers of foreign service have written on the subject, and the general principles have been formulated and universally accepted by three at least of the great European powers.

We learn among other things from Sir LUMLEY GRAHAM'S statement of the general principles, the following:

First.—"The formation for battle must be such as to favor to the utmost the effect of our own fire, and minimize the damage done by that of the enemy. * * *

Second.—"For the front or firing line the only formation, both for attack and defense, which meets these requirements, is a line of small sections extended in single rank. * * *

Third.—"The firing line has a very different mission to that of the old line of skirmishers. The latter had only to prepare the way for the columns or lines; the former, on the contrary, has to fight the battle out to its very conclusion."

I find also, by reference to the[1] "Attack Formations of European Armies," that "with regard to the shooting line there is an agreement of opinion in favor of working by groups."

In the German army "each extended section of a company forms a fire group. It is under command of a non commissioned officer and is separated by an interval from the groups on either side." In the Austrian army "each shooting line is a chain of squads (not more than seven or less than four files). Each squad has a leader of its own. The extended line has a given extent of front to cover, but within that space the squads, regulating their distance by the squad of direction, are free to act as circumstances require."

The Germans with their usual promptness to profit by their own military experience, have already incorporated the principles of infantry fighting into their directions for dismounted combat. This is what they say and teach:[1] "In order to facilitate the command of the dismounted men and the direction of the fire in broken ground, the distribution in groups must be observed, advancing by rushes from temporary cover, and turning the object to be taken from several sides, these are the principle modes of procedure that come into use." Again, the directions say: "The cavalry soldier should be able to avail himself of the advantage of the ground, surmount the obstacles it presents, gain ground by rushes, firing right up to the enemy."

1. Published by Intelligence Branch Q. M. D. Horse Guards War Office.

The Zugs or platoons, are divided into groups of from three to five files, each led by a non-commissioned officer. "Changes of direction," they say, "are best made by the leader pointing out a particular object, feeling or intervals between groups and files being taken from the center."

It is evident that we need and should at once prepare a manual of fighting tactics for our men dismounted. We should remember what General VON SCHMIDT tell us on this point, namely, to "always bear in mind that only that which has become a matter of habit and second nature on the drill ground, should be put into execution before the enemy, as it alone can have any hope of success." Fortunately we do not, in my opinion, need any radical change in our dismounted tactics, but simply development of our present methods. Our sets of fours give us, I think, an excellent system of groups, for the shooting line, and the battalion of four troops the best fighting unit. To illustrate the following outline of a method for group fighting might be considered.

In the formation of the troop, all the non-commissioned officers, with the exception of the 1st sergeant and including the corporals, would be told off as group leaders, and so far as possible two sets of fours assigned to each. Corporals should be numbers one of sets of fours to be available for dismounted purposes.

In the dismount to fight on foot, as soon as the line is formed, the troop command, "Extend for attack," would send the line forward into a line of groups in column of threes, with deploying and group intervals, and regulating on the group of direction in the center. This would be done by each group moving out right forward, fours right, or left forward, fours left, (as it may be right or left from the center,) at the command "Extend for attack." In the forward movement each group conducted by the group leader moves in double time by partial wheels to place itself in line of deploying groups.

In the preliminary advance of the group line to attack, the firing being in this stage at long ranges, the group leaders deploy their leading threes at double intervals; the men deploy right and left on number two,

1. Instructions for Cavalry.—VON SCHMIDT.

who is the guide. The group leader follows with the rear three at five or ten yards distance. The rear three may be led by the group leaders in column of files, or deployed.

When the fire of the enemy becomes effective, say at 800 to 600 yards, the group leader may throw forward, by one movement, his rear rank men to fill the intervals, or he may, if cover is available in the direction of the advance, send the men forward by name from cover to cover.

He thus holds the group well in hand and the subdivision of command of the group line affords the captain the best means of working the deployed troop forward over the long distances that must now-a-days be traversed under hot fire. The independence of the group leaders should be controlled by the lieutenants of platoons, and by instruction and drill in the following principle, namely: To advance in the direction indicated by the troop leader until halted by him, supporting and being supported by the groups right and left, is the imperative duty of all.

The troop in support should be worked up to the front in the same manner, retaining its column formation as long as possible.

It may reinforce the firing line, either by sending designated groups forward to fill intervals or by a general movement forward of the deployed supporting groups, for the purpose of increasing the fire at critical moments.

If a third troop is employed as a reserve it should be worked close up to the fighting line as the fight progresses, and the second line becomes absorbed in the first. The firing line, having at this stage been pushed up to the limit of close, rapid, independent fire, when the roar of the breech loader drowns all sound of voice, the critical moment for assault should be indicated by the trumpet charge, whereupon the reserves deployed move forward on the run, the fighting line redoubles its fire and joins in the charge when the reserve reaches it. If unable to move the enemy the men should drop to cover, and hold on to the ground gained.

In considering the battalion of four troops as an excellent fighting unit, I would suggest that the battalion be formed for dismounted attack to the front, in line of troops in column of fours. The battalion, moving on a road in column, may be thrown forward in three lines in any direction, for attack or defense, by one command of the major.

For instance at the command "Dismount for attack front," the leading troop dismounts in column of fours and extends forward in groups, for firing line, to cover front of battalion. The second troop mounted move up on the line to right of first troop, and remaining in column of fours, dismounts, left front into line and moves out in groups in support. Third troop brings the head of column in line to left of leading troop, dismounts, "right front into line" and moves out as reserve, with a platoon in column of fours in rear of each flank of support. Fourth troop

remains mounted in column of platoons echeloned in rear of the most exposed flank of led horses, or sends a platoon to each flank. The direction the attack should take, or line of defense be formed, if *oblique* to line of march, may be indicated *instantly* by the major changing the direction of column half right or half left, before commanding "Dismount for attack;" the fire line troop forming and moving out on a line parallel to the front of the leading four which has turned in the new direction. For the preliminary advance, the line of led horses in column of fours moves forward, following the dismounted men, to the limit of cover. The horse holders then dismount and half form a dismounted guard in deployed groups to the front.

The horses are held close up to cover by the other half, each man holding two bunches of four, the horse of number three being linked to number four.

If cover is available the mounted troop remains echeloned in column of platoons in rear of the exposed flank. When the ground is unfavorable for mounted work the platoons of the mounted troop are sent to each flank, dismounted, and formed obliquely to line of led horses. The flanking platoons should be extended in groups at half intervals; thus the guard of led horses forms a half circle covering their charge, the men dismounted in fire groups with every advantage of cover. Depth, not front of attack or defense, being now the rule, I can see no reason why the battalion acting singly should lose time in forming a front of troops in line before dismounting to advance. The present skirmish tactics can, of course, be used when only a thin line in observation is desired.

The advantage of a system of signals by sound between the troop and group leaders is apparent. Some officers of the German army in '71 used metal whistles, and it has been strongly recommended that all be directed to do so. In my opinion the whistles should be more for the purpose of conveying information than commands.

A realistic glance at the situation would prove this, I think. Fancy a captain working forward, under hot fire, a line of fighting groups. It is impossible for him to move up and down the line, seeing everything, in the old way. Suppose, now, his flanking group breaks out of the timber to a position from which an open view is obtained, and is able to signal without loss of time: we overlap enemy; or enemy moving right or left; or retreating from this flank, etc. Certainly the difficult task of the fire line leader would be facilitated thereby.

I am of the opinion that American ingenuity can prepare a simple code of whistle signals for information, and that each group leader should be taught to use it.

To make a system of group line movements effective, the manual of

fighting tactics suggested should insist upon vigorous and frequent drills in the school of the group.

The groups each permanently assigned to a non-commissioned officer, should be repeatedly deployed and reformed on the drill ground until leaders and men are thoroughly familiar with the details of extension from the command dismount. They should then be thrown forward for drill in attack over long distances of diversified ground; being required to climb hills, pass through woods, over fences, etc.

This part of the drill should be made realistic, and instructive in the fine art of skirmishing. The group leaders should give careful instruction, for example, in regard to use of cover; pointing out that it must afford free outlook to the front for the use of the rifle, and must not delay the advance; otherwise, to seek it, is simple cowardice.

We may be encouraged to believe, by the remarkable success of the target practice, that our men could be stimulated and interested in modern methods of attack over long distances, by a judicious system of rewards and competition in physical training.

The modern soldier should be as active on foot as an Apache Indian. Excellence in running, walking, hill climbing and long distance skirmish matches, rewarded and encouraged, would soon repay us. Quick, vigorous movement and military alertness, would become characteristic of our troops, and the half hearted performance of any drill requiring extra physical exertion, be a thing of the past.

While on the subject, I would suggest that the heavy boot now issued, be exchanged for a lighter one, and the metal clasp on the heel for the Mills spur.

The question of equipment is so closely connected with the efficiency of the cavalry for the long marches necessary for modern usefulness, that it may be considered in the question of dismounted service; as without proper equipment, the weak link in the chain, the horse's back, is likely to be used up and the trooper dismounted prematurely on the road to the battle field. In this matter we certainly have every reason to congratulate ourselves and it is due to at least two causes. One is, that in the intensely hard service of the frontier for the last twenty years, our cavalry officers have ridden thousands of miles. It is within the limit to say thousands of miles. It is safe to say, that as intelligent men of this land of invention they would be apt to discover all the defects of the horse equipments they had so constantly in use. The other cause is the fact, that of late years, the Ordnance Office has been wise and quick to receive suggestions of improvements for trial, emanating from the men who do the riding.

One further article of equipment must be provided for the cavalry man soon, and that is an implement for cutting wire fences. The extent

to which such fences are used now, will be a serious hindrance to the movement of troops in the near future.

In conclusion, I am tempted to put in a plea for the Aparejo, which has been such a good friend to many of us in Arizona and elsewhere. By its use a raiding brigade might strike out across country, almost independent of wheels and roads, and yet well supplied with rations and ammunition. The mules should be led in small trains, not herded. They could be used also, for the solution of the problem of how to supply the fire line with ammunition.

It is an American, or rather Spanish-American, improvement in transportation over rough country, and may possibly in some future war add to our honorable record as leaders in enterprise and progress for the cavalry arm.

THE FRENCH CAVALRY; ITS ORGANIZATION, ARMAMENT, REMOUNT SERVICE, SCHOOLS, INSTRUCTION, DRILL AND TACTICS.

BY FIRST LIEUTENANT O. L. HEIN,

1ST CAVALRY, U. S. A.

ORGANIZATION.

Organization in 1870.—At the outbreak of the Franco-German war the French cavalry numbered 63 regiments. Its entire strength on the peace footing was 28,000 men, and 40,000 on the war establishment. It was divided into cavalry of the Imperial Guard and cavalry of the Line, as follows:

Guard Cavalry.—One regiment of cuirassiers, 1 regiment of carbineers, 1 regiment of chasseurs, 1 regiment of dragoons, 1 regiment of lancers and 1 regiment of guides.

Line Cavalry.—Ten regiments of cuirassiers, 12 regiments of dragoons, 8 regiments of lancers, 12 regiments of chasseurs, 8 regiments of hussars, 4 regiments of chasseurs d'Afrique, 3 regiments of Spahis.

The regiments of the Guard had each 6 squadrons per regiment. The regiments of the line, viz: cuirassiers, dragoons and lancers, 5 squadrons, one being a depot squadron. The light cavalry regiments, viz: hussars, chasseurs and spahis, 6 squadrons each, one being a depot squadron.

The strength of the larger tactical units was as follows: the brigade, 1,000 men, the division, 2,000 to 5,000 men.

The cavalry divisions, if attached to army corps, had one battery of horse artillery; if acting independently, 2 batteries.

The light cavalry, as also the dragoons of the line, were mostly armed with Chassepot carbines, having a range of 800 paces only; the lancers had, in addition to the lance and saber, pistols; the cuirassiers only sabers and pistols.

The horses of the light cavalry were mostly from Algeria; those of the remainder, principally French horses.

Within three months after the opening of the War the cavalry, in

spite of its bravery and heroic devotion, was, owing to its injudicious employment, defective organization and lack of instruction for field service, almost annihilated.

Organization in 1873.—After the close of the War the cavalry was completely reorganized and largely increased; 406 squadrons were formed, being 82 squadrons in excess of its strength at the outbreak of the war. The Imperial Guard was broken up and distributed throughout the cavalry, and the guides, carbineers and lancers were disbanded. The peace establishment was as follows: 3,369 officers, 68,240 non-commissioned officers and men; total, 71,609 officers, non-commissioned officers and men and 63,193 horses.

Organization in 1887.—During the summer of 1887 a law was passed, authorizing the creation of 13 new regiments, which, when organized, will give the cavalry a peace establishment of about 74,000 officers and men.

The cavalry (including the new formations*) is divided into 90 regiments, 19 squadrons of volunteer scouts and 8 remount companies. The regiments consist of 12 of cuirassiers, 30 of dragoons, 39 of light cavalry (of which 21 are chasseurs and 18 hussars), 6 of chasseurs d'Afrique, 3 of Spahis (native African).

The cuirassiers and dragoons constitute the heavy cavalry, the chasseurs and hussars the light cavalry. The regiments are numbered in a separate series in each subdivision of arm. The home regiments and Chasseurs d'Afrique have each 5 squadrons, of which one forms the depot squadron. In war all unserviceable men and horses in each regiment are transferred to the depot squadron, and the four remaining squadrons take the field. The Spahi regiments have 6 squadrons each, and together with the Chasseurs d'Afrique are attached to the 19th Army Corps (stationed permanently in Algeria). The Spahi regiments are, with but few exceptions, recruited from the native Africans.

The home regiments are organized into brigades of two regiments each, furnishing one brigade to each army corps, as divisional cavalry, and the remaining brigades are formed into independent brigades and divisions, constituting the independent cavalry.

The brigades of divisional cavalry each consist of one regiment of dragoons and one of light cavalry, and are designated by the names of their commanders, and the number of the army corps to which attached.

The brigades of independent cavalry (each consisting of heavy or light cavalry) are designated by the names of their commanders and ac-

*New regiments in process of formation: 27th, 28th, 29th, 30th Dragoons; 21st regiment of Chasseurs; 13th, 14th, 15th, 16th, 17th, 18th Hussars; 5th, 6th, Chasseurs d'Afrique.

cording to sub-division of arm. The divisions consisting of one brigade of cuirassiers, one of dragoons, and one of chasseurs or hussars, are designated by the names of their commanders.

Squadrons of Volunteer Scouts —These squadrons, though permanently organized, are only called into active service at a mobilization, or during the grand manœuvers. Their organization is similar to that of an ordinary squadron, and they consist of selected men recruited from unattached soldiers or reservists who have served at least one year in the cavalry. They are especially intended for outpost duty. Each volunteer, when called into active service, is required to furnish his horse, uniform and equipments. One squadron is attached to each army corps. The captains are taken from the active list, and the lieutenants from the active list or reserve. The number of troopers in a squadron is 120.

The remount companies are employed as follows: One in each of the four remount districts, one with the schools, and three in Algeria.

Organization of a Squadron.—One captain commandant, 1 second captain, 1 first lieutenant, 1 second lieutenant, 2 sub-lieutenants, 1 squadron sergeant major, 6 sergeants, 10 sergeants, 1 quartermaster corporal, 12 corporals, 1 farrier corporal, 2 farriers, 4 trumpeters, 122 soldiers, (of whom 32 are of the first class); total strength of squadron, 6 officers, 150 non-commissioned officers and men, and 144 horses.

Each regiment has five field officers, 40 officers of other grades, and 817 *non-commissioned officers and men.* On the war footing a regiment has 600 combatants, a brigade 1,200, and a division 3,600.

ARMAMENT.

The cuirassiers are armed with swords and revolvers, and each regiment is provided with sixty carbines. The dragoons, chasseurs and hussars are armed with swords and carbines, sub-officers, trumpeters, corporals and farriers have a revolver and no carbine.

Remount troopers are armed with light cavalry sabers only.

The carbine is a breech-loader (Gras pattern,) bolt type; weight 7 lbs. 11 oz., length 3 ft. 10 in., caliber, .433 of an inch. The lever is bent down horizontally. The carbine is sighted up to 1200 yards, and takes the same ammunition as the Gras rifle, with which the infantry is armed.

Revolver (pattern 1873.)—This is of the same caliber as the Gras rifle. The weight of the bullet is 180.56 grains, of charge 10 grains, of cartridge 259.26 grains. Length of barrel, 4½ inches; length of revolver, 9½ inches; weight of revolver, 2 lbs. 10 oz. The revolver can be cocked with the thumb on the hammer, or by pulling the trigger.

Swords are of three patterns: cuirassiers, pattern 1854, dragoon, pattern 1854, and light cavalry, pattern 1822.

The cuirassier sword, mounted, has a length of 46 inches, its weight is 2 lbs. 15 ozs., that of its scabbard 2 lbs. 3 ozs., and of the sword and scabbard 5 lbs. 2 ozs. 14 drs.

The dragoon sword, mounted, is 45.87 inches long; it is slightly curved. Weight of sword 2 lbs. 14 ozs.; of scabbard 2 lbs. 8 ozs. 12 drs.; weight of scabbard 2 lbs. 3 ozs. 4 drs.; weight of sword and scabbard 4 lbs. 12 ozs.

The light cavalry sword is more curved than that of the heavy cavalry. Its length, mounted, is 43.3 inches. Its weight is 2 lbs. 8 ozs. 12 drs.; weight of scabbard 2 lbs. 3 ozs. 4 drs.; weight of sword and scabbard 4 lbs. 12 ozs. The weight of the helmet (steel with black horse-hair mane) is 2 lbs. 6 ozs. The cuirass (worn by cuirassiers) is of steel, and has a breast plate and back piece. Its weight varies with the size of the man, from 15 2 lbs. to 13.4 lbs

Melenite Petards.—Every trooper when ordered on reconnoitering duty receives a melenite petard, which is carried in a special compartment in the saddle bags. The petard consists of a tin case containing 3.1 ozs. of the explosive. It is exploded by means of a fulminate, cap, and fuse, and is used for the rapid destruction of railways, telegraph lines, bridges, tunnels, &c. It is said that the explosion of two petards upon a steel or iron rail, will be sufficient to make a rupture from 16 to 19 inches long. The explosion of 5 petards upon 2 non-consecutive railway ties will make a rupture 2 yards long. With 3 petards an engine or tender may be disabled; and with 15, a breach 4 feet long can be made in a wall ½ foot thick, and with 8, any field gun may be disabled.

On raiding expeditions, a great amount of damage can be done by means of this explosive, with great rapidity and safety.

REMOUNT SERVICE.

France is divided into four districts for general remount purposes, and Algeria into three districts.

Each district is commanded by a colonel or lieutenant colonel unattached, who is under the direct orders of the War Minister, in all that relates to the purchase of horses. There is an inspector general at the head of the remount service, and an assistant inspector general; the former a general of division and the latter a general of brigade. Each district contains four or five remount depots; the latter are commanded by chiefs of squadron, assisted by a number of captains and lieutenants of cavalry, a veterinary surgeon, an executive officer, and a detachment of remount troopers.

The remount depots are under the jurisdiction of the Generals commanding the Army Corps districts in which located, as regards discipline and police, but in all that relates to the remount service proper they are under the exclusive control of the commanders of the remount districts.

The purchase of horses is regulated by the War Minister, in accordance with the political forecast and the exigencies of the service. Purchases are made in public by committees, each consisting of a chief of depot, two other remount officers and a veterinary surgeon. These officers receive a daily allowance of $2.00 while purchasing horses, besides their remount pay. Only geldings and mares (except those with foal) are eligible for army use. They must be of French origin, 4 years of age, free from vice and sound, have flowing manes and tails and come up to the standard, which is 15 hands ½ in. to 15 hands 3 in. for cuirassier horses, 14 hands 3 in. to 15 hands ½ an in. for dragoon horses, and 14 to 14¾ hands for light cavalry horses.

The horses presented to the board are examined, and are accepted if a majority favor it. Each officer submits his written opinion on every horse presented, together with its money value, if he favors its acceptance. These written estimates are handed to the president, and the dealer is then informed of the price, which is the average of the three prices. A special register is kept of all horses purchased, and each officer is also required to record in his note book his opinion of the horses accepted, together with the price he has himself suggested in each case. The registers and note books are submitted to the inspector general of the remount service yearly for his examination, to enable him to judge of the qualification of the officers for this special duty.

All horses purchased are kept on probation for a period of from nine to thirty days before final acceptance.

The horses, upon arriving at the depot, are branded on the feet and divided into two classes—officers' chargers and troop horses. They are retained at the depot for a certain length of time for acclimation, dieting and preliminary training.

The prices paid for horses of the different sub-arms are as follows:

For officers' chargers, $240.

For troop horses of cuirassiers, $200.

For troop horses of dragoons, $180.

For troop horses of light cavalry, $160.

For riding school horses, $340. (Trained principally for general officers.)

Mounting of Officers.—Officers are furnished with chargers by the State, either gratuitously, on payment, or temporarily.

Cavalry lieutenants, surgeons attached to cavalry regiments and veterinary surgeons are furnished with one horse gratuitously, and captains of cavalry two horses. A general distribution of horses takes place annually on the 1st of April, when officers are allowed to choose from all horses in the regiment (except those assigned to troopers), and from the young horses arriving from the depots, provided they are at least 5 years old and suitable for squadron horses. Officers are responsible for the good care of their horses, and if the latter break down or are injured through neglect, are required to reimburse the government by paying an amount equal to the seventh part of the cost price, increased as many times as the horse would have legal years of service remaining. Officers are forbidden to lend or drive their chargers. Captains of cavalry, promoted to field officers, are allowed to retain their horses by paying an amount equal to the seventh part of the cost price of the horse, increased as many times as the latter has legal years of service remaining. Field and general officers are allowed to purchase horses at cost price.

INSPECTIONS.

The cavalry regiments, remount and veterinary services and cavalry school of application are arranged or distributed in 14 inspection districts, with an Inspector General of Cavalry (general of division or brigade) in charge of each district.

TERRITORIAL CAVALRY.

There are 19 regiments of Territorial Cavalry, each consisting of 4 squadrons, 2 of dragoons and 2 of light cavalry.

The cadres of these regiments are permanently formed, but the men are allowed to remain at their homes and have no duty whatever in peace time, except the yearly muster. The organization of a territorial squadron is similar to that of an active squadron. The territorial squadrons are mobilized at the stations of the active regiments of the same subdivision of arm.

SCHOOLS.

Regimental Schools.—Each regiment of cavalry has 3 schools; the 1st is on the principle of mutual instruction and is called the school of the 1st degree; the two others are termed schools of the 2d and 3d degrees.

In each squadron the captain commanding is entrusted with the direction of the school of the 1st degree. He causes the officers to superintend the instruction, and appoints sub-officers, corporals and educated soldiers, as teachers. These teachers receive no extra pay. The school is held in the squad-room. For the schools of the 2d and 3d degree the colonel appoints at least 3 professors, of the rank of lieutenant. The same subject can be taught by one professor in both schools.

In each regiment the colonel appoints a captain director, who has under his orders a clerk, to take charge of school property and to do clerical work, and to look after the sub-officers' library. The captain director and the officer professors form a board of examiners, which is presided over by the lieutenant-colonel of the regiment; the latter being in charge of all the schools. The instruction in the school of the 1st degree comprises reading, writing and the first four rules of arithmetic. It is obligatory for all soldiers who are ignorant of those subjects. A

special syllabus, prepared for the use of soldiers, is alone used in the regimental schools. One hour at least, daily, is given to the school of this degree, which in winter is increased to two hours.

The instruction in the school of the 2d degree comprises: grammar, arithmetic, general notions of geography and practical notions of the minor operations of war.

The school is intended for corporals recommended for promotion, farriers, sergeants, and one year volunteers. There are two classes a week, each of an hour and a half in duration. At the end of the year those pupils who have attained sufficient knowledge, are excused from further attendance.

The instruction in the school of the 3d degree comprises: exercises in French (dictation and composition,) arithmetic, history of France, geography, elements of plane geometry, map reading and instruction in topography, and field fortification.

There are three classes a week, each of an hour and a half: there are besides two attendances for study, of an hour and a half each.

This school is voluntary and is reserved for sergeants and one year volunteers. No sergeant can be recommended for promotion to the rank of sub-lieutenant unless he has passed successfully through the school of the 3d degree, or gives proof of possessing the knowledge required by the prescribed programme. The colonel fixes the hour at which the school is held and a quarterly report of the progress of the school is made by the lieutenant colonel. The captain director does not interfere with the school of the 1st degree, but the officer professors are under his orders, and he superintends the instruction given by them. He reports to the lieutenant colonel all matters concerning the school of the 2d and 3d degree.

Instruction in fencing is obligatory for both officers and men, and is under the general supervision of a field officer of the regiment, who has a 2d captain or lieutenant under his orders in special charge of the school of fencing. The instruction in fencing is given by a specially trained sergeant with a number of assistants.

Special Military School of St. Cyr.— The Special Military School of St. Cyr has for its object the the training of cadets for the infantry, marine infantry, and cavalry. The course lasts two years. Admission is by competition. Pupils are admitted between the ages of eighteen and twenty. Sergeants, corporals, and soldiers who have completed two years service, are allowed to compete to the age of twenty-five.

The pupils, 750 in number, are organized in companies and form a battalion. Those, who at the end of the 1st year, are intended for the cavalry, are formed in a section by themselves.

The staff of the school consists of: a general of brigade, commandant, a colonel 2d commandant, seventeen infantry officers (instructors), and nine cavalry officers (instructors).

Nearly all the professors are military officers, seven only being civilians. The studies are under the supervision of a director, a superior officer, who is assisted by two sub-directors of studies.

All interior matters of discipline are settled by a council of discipline, formed from the staff of the school.

After the final examination, lists are prepared, according to merit, of all those qualified for commissions in the infantry and cavalry. A certain number of those highest on the list are allowed to compete for the staff school.

Those assigned to the cavalry are sent to the cavalry school at Saumur.

Pupils who fail to pass may be placed in regiments as sergeants or corporals, if they have served the time which is necessary for promotion to these grades. The time passed at school counts as service.

School of Application at Saumur.— The School of Application for the cavalry at Saumur, has been instituted with the following objects:

First.— The instruction of a certain number of cavalry and artillery lieutenants who are sent to it each year.

Second.— The post graduate education of the "cavalry cadets," of St. Cyr, all of whom are compelled to enter it after their graduation at St. Cyr, and before being assigned to regiments.

Third.— The instruction of such non-commissioned officers of cavalry as are intended for promotion to second lieutenancies in that arm.

Fourth.— Completion of the practical instruction of newly appointed assistant veterinary surgeons.

It contains also a department of optical and electrical telegraphy for certain non-commissioned officers and privates of cavalry, and a school of blacksmithing for the education of regimental blacksmiths.

The course for all except the telegraphers lasts eleven months.

The composition of the school is as follows:

1st Lieutenants of cavalry	36
1st Lieutenants of artillery	19
2d Lieutenants of cavalry (unassigned)	71
Non-Commissioned officers	85
Veterinary Surgeons	31

The 1st lieutenants of cavalry and artillery (known as "officiers d' instruction") enter the school directly from their regiments, and are chosen (on recommendation of regimental commanders to the general of each army corps), as officers who are fitted by their aptitude, intelligence and industry, for promotion, in the event of their creditable standing at the school. The conditions are that they shall not be over 31 years of

age, and must have served at least two years as 1st lieutenants. At the end of the course these officers are classed according to their marks; those comprised in the first half are borne on the "roll of promotion," and are entitled in the order of their merit to the first vacancies of captaincies occurring in their arm; the lower half receive no advantage in the way of promotion. "No. 1," of each class, and if the class be a large one "No. 2" also, is recommended for an immediate captaincy. The lieutenants of artillery are sent to the school principally with the view of fitting them for "instructors of equitation" in their batteries. They are borne on a separate list in reckoning their standing, though their course is the same as that of the cavalry officers.

The course for all the "officiers d' instruction" is as follows:

First.—Theory and practice of cavalry manœuvers in France and abroad.

Second.—Equitation.

Third.—Hippology, including anatomy, science of breeding and practical surgical operations, system of purchasing remounts, shoeing and study of horse equipments used in France and abroad. These last two subjects are studied with much advantage in the blacksmith shops and saddle factories of the school, the largest military ones in the world.

Fourth.—Military art, including French military organizations and the principal military laws of France, history of cavalry from antiquity to modern times, tactics of the three arms, practical marches of cavalry, acting independently and in conjunction with other arms, adapted to various sorts of ground.

Fifth.—Topography; study of the principal compasses and other instruments used in France and abroad, ink etching, sketches of country traversed on horseback, map work in colored crayons. (Practical and rapid.)

Sixth.—Field fortification; knowledge of different sorts of field works, defence of inhabited places and advantages to be taken of different sorts of natural positions, practical elements of military telegraphs, employment of explosives, etc.

Seventh.—Artillery; knowledge of material of service, effects of fire, service of piece, military bridges, armament of foreign powers.

Eighth.—German. Besides the above are taught fencing, gymnastics, and target practice (carbine and revolver).

The standing of each officer is determined by weekly interrogations and quarterly examinations, while recitations from the text are always required. The maximum in each recitation is 20. To pass the school with a recommendation for promotion, each officer, even though he be in the first half, must have an average of 12 in equitation and military instruction, and 10 in general instruction.

This average seems low, but the system of marking is severe, equally so as at West Point, and the course is extensive besides. In computing the general standing at the end of the year the marks are given under 4 different heads, as follows: Conduct, 10; practical equitation, including hippology, 33; military instruction, practical part, 33; general instruction, 33.

Of these marks the ones for conduct are given personally by the commandant of the school, the others by examining committees.

It will thus be seen what a preponderance is given to the marks relating to equitation and the study of the horse. It is, in fact, the expressed desideratum of the school to make of the officer a horseman and leader of cavalry, and all the other instruction of the school is subordinated to these objects.

The 2d lieutenants from St. Cyr constitute a division entirely separate from the 1st lieutenants, as far as all instruction goes. Their course comprises equitation, and theoretical and practical knowledge of the horse, military art and history, practical manœuvers of cavalry in the field, German, target practice, topography, elements of artillery, tactics, fencing and gymnastics.

The course for the non-commissioned officers is the same as for the 2d lieutenants, except that it is more elementary in military art and tactics, and has the addition of military geography.

The Cadre of the school is as follows:

Permanent Staff.—One general of brigade or colonel, commandant; 1 colonel or lieutenant colonel, 2d commandant; 3 majors, 1 quartermaster, 1 paymaster, 1 assistant quartermaster, 1 assistant paymaster and 7 clerks.

Military Instructors.—One chief of squadron, principal instructor, and 5 captain and 7 lieutenant instructors.

Riding Masters.—One chief of squadron, principal instructor, and 4 captain and 7 lieutenant instructors.

General Instructors.—One chief of squadron, director of studies and professor of military art and topography; 1 captain, assistant instructor; 1 lieutenant, professor of history and military geography; 1 captain, professor of fortification, and science applied to military art; 1 captain, professor of German; 1 captain professor of telegraphy; 3 surgeons and 3 veterinary surgeons.

There are also a large number of non-commissioned officers and soldiers included in the permanent effectives of the school, for the riding hall, hospital, saddle factory, gymnasium, etc.

The military duty, guard, fatigue, etc., are performed by two squadrons. From these are taken the orderlies of the officers and non-commissioned officers. The non commissioned officers on entering the school are

given a distinctive uniform, are entitled to salute from all enlisted men except the non-commissioned staff and sergeants, and are provided with orderlies — one for every two. This last provision seems natural when it is recollected that they receive their promotion immediately on the completion of their course at school.

The effective of horses at the school is at present as follows:

Riding-hall animals	150
Cavalry horses, 1st class	210
Cavalry horses, 2d class	230
Draught horses	8
	598

Adding to these 200 horses in process of training at the school, and the government horses which the instruction officers and non-commissioned officers bring with them from their troops and batteries, the total of horses is 918. All the riding hall animals proper are imported English thoroughbreds, which are very carefully trained and cared for at the school. One of these horses is assigned to each officer on his arrival, and is ridden by him in the riding hall exercises, during the morning or afternoon hours of each alternate week. During the remainder of the time the cavalry horses of the first and second classes are employed for these exercises, and are chosen by the officers at random. The delicate management required in the training of these thoroughbreds forms a beneficial portion of the officers' instruction, and receives the greatest care from the riding masters. There is a school of "training" attached to the general school, which has for its object the breaking and training of the difficult horses sent each year to the school by the different regiments, and the exercising of the officers in this art. The blacksmithing school is of the greatest practical advantage. A certain number of men are annually sent from the cavalry regiments, and during the year are fully instructed in all the details of theoretical and practical blacksmithing, especially the horse-shoeing. The course of veterinary surgery seems to be most complete. The "assistant veterinary surgeons," on entering the school, sign an engagement of service for six years. The days' duties for all connected with the school begin at 6 A. M., and end, according to circumstances, at from 4 to 6 P. M.

The following is the programme for the different days:

Mondays, Wednesdays and Fridays.—Six A. M. to 8. A. M., riding hall exercises; 8:30 to 10 A. M., recitations; 12:30 P. M. to 2:30 riding hall and training school for horses; 3 to 4:30 P. M., first, recitation, fencing afterwards.

Tuesdays and Thursdays.—6 A. M. to 8 A. M., riding hall; 8:30 to 10 A. M., recitation or target practice; 12:30 to 3 P. M., mounted drill, including saber exercise, leaping of bars, ditches, walls, on steeple course; 3 to 4:30 P. M., recitation, often followed by work in one of the annexed schools till 6 P. M.

Saturdays.—Six A. M. to 8 A. M., recitation upon field service of cavalry, including reading of notes upon reconnoissances, marches of advanced and rear guards, and a discussion of the practical problem in each service given out for the day; 8 to 10, riding hall; 12 M. to 6 P. M., practical service of reconnoissance, etc., (practical solution of the morning problem). Occasionally this problem is given out on Friday, and the whole of Saturday is given to this practical work. In this case the start is made as early as 5 A. M., each officer carrying his breakfast in his saddle-bag.

The officers d'instruction are divided for the purpose of military exercises into two permanent divisions, each under command of a captain. They are often employed as two opposing bodies of troops in simulating the actual operations of war, and sometimes combined when there is need of a large body. They thus form two companies, by which, singly or combined, all the principles of war can be practically demonstrated, from the march of an army corps to that of a reconnoitering squad. The second lieutenants and non-commissioned officers perform, in addition to their school duties, those of ordinary garrison routine, like the officers of our Leavenworth school. They are both in barracks and are required to keep certain hours, and subject to a considerable degree of discipline. The first lieutenants under instruction are exempt from all duties, save the drills and studies pertaining exclusively to their course. They are quartered in lodgings in town at their own expense. All of the officers of the school are bachelors and are required to mess together. This arrangement is supposed to foster "bonne camaraderie," render the living cheaper, and prevent any feeling of humiliation on the part of the poorer officers, who cannot afford to keep expensive establishments. All officers preserve after their arrival at the school the uniform of their respective regiments and corps. For the riding exercises, however, there is prescribed for all a dark blue "culotte," tight-fitting at the knee and very loose above, so made as to leave the greatest liberty to the limbs on horseback, a close-fitting boot and nickle spurs. All of these articles are eminently neat and practical. The "culottes" save clothes, and with the rest of the dress, have a very military air.

The etiquette in dress is very strict. Everyone appears in boots in the morning and wears them at all exercises, until the duties of the day are over; they are never permissible in the evening at dinner. Spurs are always worn, and no officer leaves his quarters in the afternoon after four o'clock without the saber; gloves are equally obligatory in the afternoon promenades. It may be proper to remark that the system of instruction in the school since the war of 1870 has, like that in the other branches of the military service, undergone a great change. The

entire revolution in their tactics since that date has involved a different course of study, and the work pursued in the school is of the most earnest and unremitting kind. Neither precept nor example is lacking on the part of the superior officers to maintain this. The Commandant of the school attends, in all sorts of weather, the opening of the riding hall at 6 A. M., and is seen constantly during the day at the various exercises. There are four immense riding halls at the school, three of them being larger than that at West Point, and four large stables. The latter are built of stone and are said to be the most perfect models of stables in existence.

Preparatory Cavalry School at Autun.—This school was established in 1886, its object being the education of boys for the grade of sergeant of cavalry. The cadre of the school is as follows: One chief of squadron, commandant; 1 captain commandant, 2nd commandant; 3 lieutenant instructors; 1 paymaster; 1 administration officer; 1 doctor; 3 sergeant major instructors; 6 sergeant instructors; 13 corporal instructors; 1 sergeant fencing master; 1 sergeant gymnastic instructor. There are besides a number of non-commissioned officers, trumpeters and troopers employed as clerks, workmen, etc.

The personnel of civilians consists of 1 professor and 10 assistant professors. The refectory, laundry and hospital are under the charge of 8 Sisters of Charity.

The number of pupils at the school is 500. The age of admission is 13, and the boys graduate just as they reach the minimum age for enlistment. They sign an engagement to serve in the army for a period of seven years.

The course of instruction lasts five years. The school is divided into five classes. The first comprises the boys of 17 years of age, the second those of 16, the third those of 15, the fourth those of 14, and the fifth those of 13. The boys are organized into three squadrons, each under a lieutenant instructor, who commands, instructs, and administers his squadron, the duties being similar to those of a captain in a regiment. He has under his orders as assistants 1 sergeant major, 2 sergeants, 4 corporals, and some chiefs of squad, selected from those boys in the squadron who are most distinguished for their military bearing, soldierly conduct and capacity for command. The course of instruction comprises:

First.—Primary instruction, reading, writing, arithmetic, elements of geometry, land surveying, leveling, the elements of physical and natural sciences, history and general geography, German, vocal music and landscape drawing from nature.

Second.—Military instruction, which embraces the school of the trooper, platoon and squadron, garrison and field service, elementary

course in fortification, topography, artillery, administration and accountability, the application of the physical sciences to railways and telegraph lines from a military point of view, a course in hygiene.

The programme of the course in gymnastics, fencing, boxing and Indian clubs is prescribed in orders from the War Office.

All the pupils wear a military uniform, and those of the first and second classes, spurs, and are armed as light cavalry.

The main object of this school is not only to give these boys a good primary, general and military education, but also to inculcate in them a high sense of honor, patriotism and good fellowship. Each year 100 of the pupils are distributed among the different cavalry regiments, and of this number more than two-thirds are expected to make good non-commissioned officer instructors. It is believed that this preparatory school, now in its infancy, will give the best results, and will furnish the cavalry regiments with good sergeants.

INSTRUCTION.

The instruction of the cadres and troopers of the French cavalry is considered the most important part of their service, and all other duties are subordinate to it. The instruction year is divided into four periods, each of which closes with an inspection.

First Period.—Lasts about six months, and is wholly devoted to individual instruction, and comprises: School of the trooper, mounted and dismounted, theoretical instruction in the elements of garrison and field service, preparatory instruction in fencing, care of arms, vaulting, gymnastics, including running, jumping, use of parallel bars, boxing, etc. The inspection of this period is made by the colonel of the regiment.

Second Period.—Extends from April 1st to June 1st, and comprises: The school of the trooper mounted (with arms), school of the platoon mounted, platoon and squadron drill dismounted, and theoretical instruction in garrison and campaign service. This period, during which the recruit becomes a soldier, is considered so important that its inspection is made by the brigade commander.

Third Period.—Begins on June 1st and ends on July 15th, and comprises the school of the squadron mounted and a continuation of the practical lessons in field service. As the regimental drill can only begin, with advantage, after the instruction of the squadron has been completed, the colonel makes the inspection of this period himself, requiring each squadron, after going through the various evolutions, to perform a practical operation in field service.

Fourth Period.—Begins about the middle of July and ends on the 1st of September, and comprises the school of the regiment, practical exercises in field service and the different branches of instruction left un-

finished at the end of the third period, such as the training of the young horses and the practical exercises of the cadres. The inspection of this period is made by the division commander or the division inspector general.

The instruction of the recruits in horsemanship, only begun in the first year, is continued during the remaining years of their service. Owing to the great importance attached to riding drills without arms, as much time is devoted to the old soldiers in these exercises as to the recruits, the captains regulating the period of individual mounted instruction, so that the old soldiers and recruits are ready to begin the squadron drill together.

Practical instruction in field duty, the object of which is to train the troopers in their duties in war and to cultivate their individuality and intelligence, is given as often as possible on varied ground. The drills and field exercises go hand in hand through ut the year, each receiving an equal amount of attention.

Drill Regulations.—The drill regulations of the French cavalry were published in 1876, revised and completed in 1882, and consist of four parts. 1st. Basis of instruction, 137 pages. 2d. Dismounted instruction, 65 pages. (The length of the quick step is 29½ inches and cadence 115 per minute; the double step 31½ inches and cadence 170 per minute.) 3d. Mounted instruction, including the regimental evolutions, 207 pages. 4th. School of the brigade and division, 160 pages.

The practical instruction for cavalry field service was published by the War Office in 1884. It is divided into two parts. Part 1 gives the principles and rules for cavalry field service, and Part 2 explains the method of applying these principles and rules on the ground. The subjects treated of, are: general definitions, orientation, definitions relating to the ground, reconnoissances of the ground, indications, written orders and reports, execution of marches, march of an isolated squadron, squadron as advance guard and rear guard, reconnoitering, establishment of cantonments, bivouacs and camps, and the duties pertaining to each, police and picket guards, outposts, subsistence of troops in the field, requisitions, minor operations of war, distributions, provost guard duty, safe guards.

The platoon is formed in double rank and consists of twelve files, including a non-commissioned officer on each flank and one in the center of the front rank. The platoon leader is the guide and is posted 1½ paces in front of the center of the platoon. Commands may be given in three ways, either singly or combined, namely, by the voice, by gesture and by the direction and gait of the horse, but every well-instructed platoon must be able to follow its leader without commands. In the direct march in line the corporal in the center of the platoon follows accurately in the trace of the platoon leader and preserves a distance of 1½ paces from him.

The troopers all dress toward the center, keeping slight intervals to secure ease in the ranks. In open order the distance is 6 paces. In the route column the guide is 1½ paces in front of the center of the leading four. This column is always formed by breaking to the front from either flank.

The dismounted combat of a platoon is conducted as follows: At the command "Fight on foot" the troopers halt and dismount, with the exception of No. 2s. In dismounting, the guide, front rank, and Nos. 1 and 3 of the rear rank move forward; the guide and Nos. 1 and 3 of the front rank two horses' lengths, the others one horse's length. The Nos. 2 and 4 of the rear rank stand fast. All the troopers then dismount, with the exception of the No. 2s.

Numbers one and three hand their reins to number two, and numbers four link their horses to those of number three. Numbers one, three and four then take their cartridge boxes from the right saddle bags, pass them over their shoulders and move rapidly to the front, forming in two ranks.

If a smaller number of dismounted troops is required, the numbers two and four dismount, and pass their reins to numbers one and three, who remain mounted.

The platoon leader designates the support and moves his dismounted men to the front at the double, and deploys them as skirmishers with two paces intervals, and with the guide center. The led horses are conducted to the rear by a non-commissioned officer. The skirmishers are taught the principles of attack and defense, fire discipline, to take advantage of cover, and commands are given by the voice or by the whistle, and no trumpet signals are allowed except for the "Assault." At the signal "Rally," the led horses are brought up to the platoon, or to a point indicated by the leader, when the men regain their horses rapidly by the shortest route, sling carbines and mount. If the support has not been deployed, it forms in rear and delivers fire, while the men are regaining their horses. The route column may also be dismounted to fight.

The squadron consists of 48 files, (first-class troopers in the front rank). The captain is posted ½ squadron length in front of the center of the squadron. The four lieutenants 1½ paces in front of the center of their platoons. The 2d captain 3 paces in rear of the center of the squadron. The four senior sergeants are 1½ paces in rear of the center of their respective platoons, and the remaining sergeants and corporals are on the flanks of the platoons and counted in the fours. When the captain commandant gives a command his saber is raised vertically, and lowered similarly at the command of execution. The chiefs of platoon have their sabers drawn only when the men carry theirs. In the direct march in line, the captain commandant is guide, and the chief of the 2d platoon regulates his march so that the center of the squadron will always be at the prescribed distance from the guide and directly in his

trace, the other platoon leaders regulate on the leader of the 2d platoon and the file closers see that the corporal in the center of each platoon marches accurately in the rear of the platoon leader. If the squadron leader leaves his place in line, he indicates the point of direction to the chief of the 2d platoon, when the direction of the march devolves upon the latter.

Column of platoons may be formed from line, to the right or left, or to the front. In this formation the captain commandant, when guide, is half a platoon front, in front of the leader of the first platoon. Line may be formed from column, to the front, to the flank, or obliquely to the flank. As a rule, all deployments, in which the platoons have unequal distances to pass over, are executed at a rapid gait, and the platoons move to their places by the shortest route. The usual drill pace of the squadron is the trot, but it is frequently drilled over long distances, at a fast gallop. The paces of the cavalry are, as follows:

	Walk.	*Trot.*	*Gallop.*	*Fast Gallop.*
Light Cavalry,	110 yds per minute.	262 yds per minute.	371 yds per minute.	481 yds per minute.
Line "	120 " "			
Reserve "	130 " "			

The charge of the squadron is executed in line or in column, in close or extended order. The enemy is always marked by four troopers supervised by a non-commissioned officer, arranged so as to represent the four chiefs of platoon of an opposing squadron. To execute the charge the captain causes sabers to be drawn, and passes to the gallop at 700 or 800 yards from the enemy. Before reaching the point from which he wishes to make the charge, the squadron leader commands "Attack," and does not command "Charge" until the squadron has arrived within 50 or 60 paces of the markers representing the enemy. At the command "Charge," which is repeated by all the lieutenants, the squadron charges sabers and increases its gait to the greatest speed consistent with the control of the horses. The charge from column is only made when there is neither time nor space for deploying, or when it is desired to break the enemy's line at some point at any cost. The charge as foragers may be executed from line or column, and may be combined with a charge in compact order. It consists of the dispersion and charge, and the enemy is represented as before, but the markers have an increased interval. At the command "As foragers charge," the troopers take the gallop and disperse in a fan-shaped order, upon arriving at 100 paces from the markers the charge is sounded. After charging from 150 to 200 paces, the squadron rallies rapidly upon the squadron leader.

Preliminary to every charge, ground scouts and combat patrols are pushed out 200 yards rapidly to the front and flanks to reconnoiter the ground and obtain quick intelligence of the movements of the enemy. In the attack the role of the scouts is considered most important, and their employment is never omitted.

In the dismounted combat of a squadron 3 platoons are generally dismounted to fight, one forming the support. The 4th platoon remains mounted and acts as reserve. The squadron leader commands the dismounted men, and a lieutenant the led horses.

School of the regiment.—The regiment of manœuver consists of 4 squadrons, the squadron interval is 12 paces. The squadrons are numbered from right to left; the 1st and 2d constitute the right wing, the 3d and 4th, the left wing; each commanded by a chief of squadrons. The posts of the officers in line are as follows: The colonel, when acting as guide of the regiment, ½ squadron front in advance of the captain of the squadron of direction; the captain instructor behind him; the 2 sergeant majors, chief trumpeter and colonel's trumpeter, in rear of the captain instructor; the lieutenant colonel to the left and a little in rear of the colonel; the chiefs of squadrons, in front of the center of their wings, in line with the captains commandant. The standard is on the left of the 4th platoon of the 2d squadron.

The line formations of the regiment are as follows:

First.—The line of battle, in which the normal squadron interval is 12 paces. This order is especially employed in the charge, and is also used when the regiment is obliged to remain motionless and exposed to artillery fire.

The regiment wheels at all gaits, and always on a movable pivot.

Second.—The line of platoon columns, in which the squadron interval is equal to the front of a squadron in line. The line of platoon columns possesses great mobility, and can be used with advantage on varied ground. It admits of a rapid deployment into line of battle, and is regarded the best preparatory formation for attack.

Third.—The mass formation, which is the same as the line of platoon columns, with the interval reduced to twelve paces. The mass occupies but little space, comparatively speaking, and can be manœuvered and deployed with great facility.

The column formations are as follows:

First.—The column of platoons with squadron distances of eighteen paces. The field officers and the captain commandant, except the first, march on the flank of the column. The colonel, when guide, marches one half squadron front in advance of the captain of the leading squadron. From the column of platoons may be formed the three orders in line, either parallel, perpendicular or oblique to the column.

Second.—The double column, consisting of the two half regiments, in column of platoons side by side, with an interval of twelve paces.

Third.—Column of route.

The charge of the regiment is executed in the same general manner as that of the platoon and squadron. The colonel and the officers and

non-commissioned officers and trumpeters who accompany him, place themselves in the center of the regiment, in line with the company officers.

For the peace manœuvers the general rule is to begin the attack at the walk, then pass to the trot, which is continued for about 1,000 paces, then commence the gallop, which is kept up for 600 paces, or in the attack of infantry for 800 paces, then charge for about 80 to 100 paces.

Evolutions of the Brigade.—The brigade of manœuver consists of two regiments and one battery of horse artillery.

The line formations are: The line of battle, the line of platoon columns, and the line of masses.

The column formations are: The column of masses, the column of squadrons at full or half distance, the column of platoons, the double column and the route column.

When the brigade is in line formation the squadron of direction is usually the 2d squadron of the 1st regiment. The general of brigade is half squadron front in advance of the colonel of the 1st regiment.

Evolutions of the Division.—The division of manœuver consists of three brigades and three batteries of horse artillery.

The line formations are: The line of battle, the line of platoon columns, the line of masses and the line of brigades in columns of masses. The column formations are: The column of squadrons, the column of platoons, the double column and the route column.

In line, the direction is taken from the regiment of direction of the center brigade.

TACTICS.

Tactical Employment of Cavalry.—In the field service of the French cavalry, other than its action on the field of battle in conjunction with the other arms, the duties of scouting and gaining intelligence of the enemy (service d'exploration,) and those of insuring the safety of the army (service de securite,) are separate and distinct, and entrusted to different corps, the former to the independent, and the latter to the divisional cavalry.

The role of the independent divisions covering the army, consists in screening the movements of their own army, whilst endeavoring to discover those of the enemy, thus forming the strategical advanced (or rear) guard of the force they cover.

Each independent division provides for its own safety on the march, by an advanced-guard, flanking parties, etc., and at a halt, by outposts.

Its explorations are made by discovery patrols, each consisting of an intelligent non-commissioned officer and from 2 to 6 troopers, pushed 2 or 3 days ahead of the advanced contact squadrons, their mission being to thoroughly reconnoiter the country and cover the division on the march;

and officers' patrols consisting of an officer and 2 or 3 picked troopers, pushed still farther ahead, either upon some special mission or to gather what information they can of the enemy. These scouting parties and officers' patrols are allowed great freedom of action for reconnoitering purposes, and are quite independent of the main body.

Each division generally furnishes 2 contact squadrons for this duty, two platoons of each squadron performing the patrol duty, with the remaining two platoons in support. Thus with 16 patrols of 6 men, each covering a front of 2 miles, the division would explore a total front of 32 miles. The main body (the remaining 21 or 22 squadrons and the horse artillery) follows in rear under the immediate orders of the division commander. While at a considerable distance from the enemy, 40 miles or more, the division marches on several roads, 3 if possible, with the cuirassier brigade in the center and a little in the rear of the other brigades, one contact squadron being detached from each. Upon nearing the enemy, the division contracts its front, and marches on 1 or 2 roads, employing a contact squadron for the line and light brigades in the first case, and in the second case, one squadron from the leading brigade. Connection with the army is maintained by the brigades of divisional cavalry.

The brigades of divisional cavalry are charged with the service of security, which, as a rule, is restricted to a comparatively limited zone. Each brigade is disposed in 3 lines:

First, scouts; 2d, supports, consisting of groups of squadrons 2 or 3 miles in rear of the 1st line; 3d, the reserve, consisting of the 2d regiment of the brigade, 2 or 3 miles in rear of the center of the 2d line and under the immediate orders of the brigade commander. The main purpose of this arrangement, is to secure a curtain or screen, through which nothing must be allowed to pass. This 3 line formation though unsuitable for the service of exploration, is considered to be the best for the service of security, for the echelons being quite near the main body, can readily find shelter within the infantry lines, and their role not being an offensive one, rapidity of concentration is not so urgent as in the case of the independent cavalry.

When the division forms for combat it is distributed in three lines of echelons, with the center in advance. If the division consists of two brigades only, one forms the first line, and the second the second and third lines. As a rule, the brigade of cuirassiers is posted in the first line, and the brigade of dragoons and light cavalry, in the second and third lines respectively. Each line immediately throws out ground scouts and combat patrols. The distance between the first and second lines is from 200 to 300 paces, and between first and third from 300 to 400 paces. The horse artillery is massed 150 paces in rear of the first line. The first line formed in line of masses with deploying intervals, or in line

of platoon columns, is the line of attack. Its commander selects his point of attack and manœuvers accordingly, deploying his squadrons as late as possible. He, as well as the commander of the second line, is allowed great liberty of action. The second line is the line of manœuver and generally marches in line of masses with deploying intervals, and is formed in line of columns as soon as the first line is deployed into line of battle, and remains always at a fixed distance from the first line. Its special role is to support the first line, and manœuver against the flank or rear of the enemy's second line. Its commander always retains some squadrons in hand. The third line, held as a reserve against every eventuality, keeps at a distance of about 450 paces in rear of the first, and is under the immediate orders of the division commander.

The fundamental principles of combat of the French cavalry are as follows: Against cavalry to always attack first, and anticipate the adversary in the charge; to surprise and take him in flank and rear; to support every front attack by a simultaneous flank attack.

Cavalry, as a rule, should never charge infantry, unless the latter be demoralized and wavering, in which case, it must endeavor to approach it under cover till within striking distance, and then attack with the greatest impetuosity, passing over the death zone as rapidly as possible. The attack is made in echelons, one following the other in rapid succession, so that the enemy will not have time to reform his broken lines.

In the attack against artillery one portion of the cavalry charges as foragers, overlapping both flanks of the enemy, whilst the remainder tries to turn the position and fall upon the supports.

Works used in the foregoing compilation:
Annuaire de la Cavalerie Francaise, 1885.
Revues de Cavalerie, 1887–'88.
Reglement sur les Exercises de la Cavalerie.
The Armed Strength of France.
The School of Application at Saumur, by Lieutenant S. C. ROBERTSON, 1st Cavalry.

CONSTITUTION AND BY-LAWS

OF THE

U. S. CAVALRY ASSOCIATION.

ARTICLE I.

TITLE.

This society shall be known as the "U. S. CAVALRY ASSOCIATION."

ARTICLE II.

HEADQUARTERS.

The headquarters shall be at Fort Leavenworth, Kansas.

ARTICLE III.

DESIGN.

The design of the Association is professional unity and improvement, and the advancement of the cavalry service generally.

ARTICLE IV.

MEMBERSHIP.

SECTION 1. The Association shall consist of regular, life, honorary and associate members.

SEC. 2. Cavalry officers and former officers of honorable record in that arm are entitled to become regular or life members, without ballot, upon their application and upon payment of dues.

SEC. 3. Honorary members shall be elected from men distinguished in military or naval service, not on the active list, and from eminent men of learning. Their number shall not exceed twenty. Nominations for honorary members shall be made to the Executive Council, and after favorable report by the Council, a vote equal to one-half the number of regular and life members, given by proxy or presence at an annual meeting, shall be cast, a majority electing.

SEC. 4. Any individual may be elected an associate or life member by a vote of the Executive Council, confirmed by a majority vote of the regular resident members of the Association.

SEC. 5. The prize essayist of each year shall be a life member without payment of fee.

SEC. 6. Associate members and those elected life members under Section 4 of this Article, shall be entitled to all the rights and privileges of the Association, including a share in its discussions, presentation of papers, etc., but shall not be entitled to vote or be eligible to office.

SEC. 7. Membership dates from the first day of the calendar year in which the application is made, unless said application is made after December 15th, when the membership dates from the first day of the next calendar year.

SEC. 8. The entrance fee shall be $2.00, payable upon joining the Association, and this shall be in lieu of annual dues for the first year's membership. The annual dues shall be $2.00, payable upon the first of each succeeding calendar year. The fee for life membership shall be $25.00.

SEC. 9. No member shall be dismissed, except on recommendation of the Executive Council, approved by a majority vote of the members of the Association, voting by proxy or presence, at any regular or called meeting, of which notice of at least one month shall be given. Members two years in arrears shall be dropped. When dropped for non-payment of dues they may regain their membership by paying two years' arrearage of dues, but the Executive Council may adjust any special case on its merits.

ARTICLE V.

GOVERNMENT.

SECTION 1. The officers shall be:

A President.

A Secretary, who shall also be Treasurer.

A Vice-President and a Corresponding Secretary for each branch.

SEC. 2. The permanent committees shall be:

An Executive Council, to consist of the President of the Association, the Secretary and Treasurer, and three members to be appointed by the President.

A Committee on Publication and Correspondence, consisting of two members appointed by the President, and the Secretary and Treasurer.

ARTICLE VI.

DUTIES.

SECTION 1. The President shall preside at the meetings of the Association or its branches at which he may be present, and generally shall perform such duties as pertain to the office.

SEC. 2. In the absence of the President the senior regular member present shall preside.

SEC. 3. The Secretary and Treasurer shall be *ex-officio* a member of the Executive Council and of the Publication and Correspondence Committee. He shall keep a journal of the proceedings of the Association, a separate record of the proceedings of the Executive Council, and a copy of the Constitution and By-Laws. He shall be generally the organ of the Association in matters of finance, business and correspondence. At each annual meeting he shall submit a detailed report of the business of the Association.

SEC. 4. The affairs of the Association shall be conducted by the Executive Council, which may make such regulations not inconsistent with the Constitution as may seem necessary. Three members of the Council shall constitute a quorum.

SEC. 5. The Committee on Publication and Correspondence shall have charge of the preparation of manuscript for publication, the transaction of all business connected with the printing, publishing, and editorial management of the Journal of the Association. It shall also be the duty of this committee to further the interests of the Association by correspondence, giving information of the objects and purposes of the Association, and distributing circulars, pamphlets, and such other publications of the Association as may be deemed advisable.

SEC. 6. The selection of papers for publication in each Journal shall be made from those read before the Association by a special committee appointed by the presiding officer. These committees will not be announced.

ARTICLE VII.

ELECTIONS.

The officers of the Association shall be elected at the annual meetings. A majority of votes cast by presence or proxy shall elect.

ARTICLE VIII.

BRANCHES.

SECTION 1. Branches of this Association may be established at any station where there are eight regular members. At a station where there is no branch, a Corresponding Secretary shall be appointed by the President, who shall attend to the business pertaining to the Association for that station.

SEC. 2. The officers of a branch shall be a Vice-President and a Corresponding Secretary.

SEC. 3. The Vice-President shall perform the same duty for the branch as prescribed for the President of the Association.

SEC. 4. The Corresponding Secretary of a branch shall keep a register of the members residing in his vicinity, and an account current with each. He shall keep a journal of the proceedings of the branch, and a copy of the Constitution and By-Laws. He shall give due notice of the meetings of his branch. He shall forward to the Secretary and Treasurer of the Association all papers read before his branch, and keep himself informed of all business relating to his branch. He shall receive and distribute publications. He shall collect dues from members of his branch and give receipts therefor. He shall be authorized to expend such part of the funds in his possession for stationery, postage and other incidental expenses as may be necessary. He shall, at the end of each quarter, render to the Secretary and Treasurer a detailed statement of moneys received and expended, and shall forward the

funds remaining on hand, retaining only sufficient to defray the estimated current expenses of the branch for the ensuing quarter.

SEC. 5. Monthly meetings of each branch may be held upon such dates as the branch may decide; but if there be no paper to be read or business to be transacted at the appointed date, the Corresponding Secretary may omit the call for the regular meeting. Special meetings may be called when necessary.

SEC. 6. Branches will make such By-Laws, not inconsistent with this Constitution, as may be deemed necessary for a proper transaction of business.

ARTICLE IX.

MEETINGS.

SECTION 1. An annual meeting shall be held at the headquarters of the Association, on the third Monday of January.

SEC. 2. The regular business meetings shall be held twice each month. Special meetings shall be called by the President and Secretary when desirable.

ARTICLE X.

PAPERS AND PROCEEDINGS.

SECTION 1. Whenever deemed advisable by the Executive Council, the papers read before the Association and its branches, together with the discussions growing out of the same, shall be published, and distributed free of expense to each regular, life, honorary and associate member, and to such libraries and periodicals as may be determined by the Committee on Publication and Correspondence.

ARTICLE XI.

ALTERATION OF THE CONSTITUTION.

SECTION 1. The Constitution may be added to or amended by a two-thirds vote of the regular members present or properly represented by proxy, at an annual meeting of the Association. Proposed alterations shall be furnished the Secretary in writing, signed by five or more members, not less than three months prior to the meeting at which they are to be acted upon. The Secretary, under the direction of the Executive Committee, shall publish such proposed alterations to the Association not less than sixty days prior to said meeting.

BY-LAWS.

SECTION 1. Cushing's manual shall, in so far as applicable, govern the parliamentary proceedings of the society.

SEC. 2. The regular meetings shall be held on the first and third Mondays of each month.

SEC. 3. The regular order of procedure shall be:

Reading the minutes of the previous meeting.
The reading of papers.
The discussion of papers.
Stated business.
Unfinished business.
Reports of committees.
Miscellaneous business.
New business.
Adjournment.

SEC. 4. When members discuss papers orally, in the absence of a stenographer, it is expected that they submit to the Publication Committee, in writing, what they consider to have been the substance of their remarks.

SEC. 5. A quorum for the transaction of business, other than the reading and discussion of papers, shall consist of a majority of the regular resident members.

SEC. 6. These By-Laws may be added to or amended at any meeting by a two-thirds vote of the regular resident members.

OFFICERS OF THE ASSOCIATION.

1888.

PRESIDENT.

BRIG. GEN'L W. MERRITT, BVT. MAJ. GEN'L U. S. A.

SECRETARY AND TREASURER.

FIRST LIEUT. O. L. HEIN, 1ST CAVALRY.

EXECUTIVE COUNCIL.

BRIG. GEN'L W. MERRITT, BVT. MAJ. GEN'L U. S. A.
MAJOR E. V. SUMNER, 5TH CAVALRY, BVT. LIEUT. COL. U. S. A.
CAPTAIN T. H. RAFFERTY, 6TH CAVALRY.
CAPTAIN C. C. CARR, 1ST CAVALRY.
FIRST LIEUT. O. L. HEIN, 1ST CAVALRY, SEC'Y AND TREAS. (*ex-officio.*)

COMMITTEE ON PUBLICATION AND CORRESPONDENCE.

CAPTAIN J. B. BABCOCK, 5TH CAVALRY, BVT. MAJ. U. S. A.
FIRST LIEUT. M. F. EGGLESTON 10th CAVALRY.
FIRST LIEUT. O. L. HEIN, 1ST CAVALRY, SEC'Y AND TREAS. (*ex-officio.*

BRANCHES:

WEST POINT, N. Y.

VICE-PRESIDENT,

FIRST LIEUT. G. B. DAVIS, 5TH CAVALRY.

CORRESPONDING SECRETARY,

FIRST LIEUT. W. C. BROWN, 1ST CAVALRY.

FORT RENO, INDIAN TERRITORY.

VICE-PRESIDENT.

COLONEL J. F. WADE, 5TH CAVALRY.

CORRESPONDING SECRETARY.

FIRST LIEUT. F. MICHLER, 5TH CAVALRY.

LIST OF MEMBERS.

HONORARY MEMBERS.

General W. T. SHERMAN, U. S. A.
Hon. J. C. ROPES.
Brig. Gen'l P. ST. GEORGE COOKE, U. S. A.
General LEW WALLACE.
Brig. Gen'l WM. S. HARNEY, U. S. A.
Governor FITZHUGH LEE.
Hon. JOSEPH WHEELER, M. C.

REGULAR, ASSOCIATE AND LIFE MEMBERS.

ALMY, W. L. ..... 2d Lieut. 5th Cavalry
ALLEN, J. ..... 1st Lieut. 3d Cavalry
ARNOLD, A. K. ..... Lieut. Col. 1st Cavalry
ANDRUS, E. P. ..... 1st Lieut. 5th Cavalry
AUGUR, J. ..... Captain 5th Cavalry
BABCOCK, J. B., Capt. 5th Cav., Bvt. Maj. U. S. A.
BOUGHTON, D. H. ..... 1st Lieut. 3d Cavalry
†BRECKENRIDGE, J. C. ..... Col. Ins. Gen'l
BLOCKSOM, A. P. ..... 1st Lieut. 6th Cavalry
BLAKE, J. Y. F. ..... 1st Lieut. 6th Cavalry
BROWN, W. C. ..... 1st Lieut. 1st Cavalry
BROWN, O. J. ..... 1st Lieut. 1st Cavalry
BEACH, F. H. ..... 2d Lieut. 6th Cavalry
BRADEN, C. ..... 1st Lieut. U. S. A.
BINGHAM, G. S. ..... 2d Lieut. 9th Cavalry
BOMUS, P. S. ..... Capt. 1st Cavalry
BATES, A. E. ..... Major Pay Dep't
BAIRD, W. ..... 1st Lieut. 6th Cavalry
BEACH, W. D. ..... 1st Lieut. 3d Cavalry
BRYAN, R. B. ..... 2d Lieut. 2d Cavalry
BROWN, A. H. ..... 2d Lieut. 4th Cavalry
BACON, J. M. ..... Major 7th Cavalry
CARR, E. A., Col. 6th Cav., Bvt. Maj. Gen. U. S. A.
CARR, C. C. ..... Captain 1st Cavalry
CRAIG, L. A. ..... 1st Lieut. 6th Cavalry
COOPER, C. L. ..... Captain 10th Cavalry
COONEY, M. ..... Captain 9th Cavalry
CLINCH, C. N. ..... 2d Lieut. 3d Cavalry
CAMPBELL, L. E. ..... Captain Q. M. D.
CHEEVER, B. H. ..... 1st Lieut. 6th Cavalry
CARROLL, H. ..... Major 1st Cavalry
CLARKE, P. H. ..... 2d Lieut. 10th Cavalry
CAMERON, G. H. ..... 2d Lieut. 7th Cavalry
CARSON, J. M. ..... 2d Lieut. 5th Cavalry
COOLEY, JAMES C. ..... Late Capt. 5th Cavalry
DICKINSON, W. M. ..... 1st Lieut. 4th Cavalry
DAVIS, G. B. ..... 1st Lieut. 5th Cavalry
DORST, J. H. ..... Captain 4th Cavalry
†DIETZ, W. D. ..... 1st Lieut. M. D.
DAY, M. W. ..... 1st Lieut. 10th Cavalry
EGGLESTON, M. F. ..... 1st Lieut. 10th Cavalry
ELLIS, E. A. ..... 1st Lieut. 8th Cavalry
ELLIOTT, W. L., Col. and Bvt. Maj. Gen. U. S. A.
ELLIOTT, S. H. ..... 2d Lieut. 5th Cavalry
EVANS, E. W. ..... 2d Lieut. 8th Cavalry
FINLEY, L. ..... 1st Lieut. 10th Cavalry
FINLEY, W. L. ..... 1st Lieut. 9th Cavalry
FARBER, C. W. ..... 2d Lieut. 8th Cavalry
FOUNTAIN, S. W. ..... 1st Lieut. 8th Cavalry
FOLTZ, FRED. S. ..... 1st Lieut. 1st Cavalry
FREEMAN, S. D. ..... 2d Lieut. 10th Cavalry
FOSTER, F. W. ..... 1st Lieut. 5th Cavalry
FULLER, E. B. ..... 1st Lieut. 7th Cavalry
FORBUSH, W. C. ..... Captain 5th Cavalry
GARRARD, JOS. ..... 1st Lieut. 9th Cavalry
GOLDMAN, J. H. ..... 1st Lieut. 5th Cavalry
†GIBBS, GEO. W. ..... Capt. M. N. G.
HEIN, O. L. ..... 1st Lieut. 1st Cavalry
HATCH, EDWARD, Col. 9th Cav. Bvt. Maj. Gen'l
HARRIS, M. ..... Captain 1st Cavalry
†HEIZMAN, C. L. ..... Major M. D.
HALL, W. P. ..... Captain 5th Cavalry
†HASBROUCK, H. C. ..... Major 4th Artillery
HUNTT, G. G. ..... Lt. Col. 10th Cavalry
HALL, T. W. ..... 2d Lieut. 10th Cavalry
HAYES, E. M. ..... Captain 5th Cavalry
†HAIDEN, J. J. ..... 1st Lieut. 8th Infantry
HENRY, GUY V., Maj. 9th Cav., Bvt. Col. U. S. A.
HOYLE, G. S. ..... 1st Lieut. 1st Cavalry
HUNT, L. P. ..... 1st Lieut. 10th Cavalry
HUGHES, M. B. ..... Captain 9th Cavalry
†HUGHES, W. N. ..... 2d Lieut. 13th Infantry
†HOFF, I. VAN R. ..... Capt. M. D.
HAINES, J. T. ..... 2d Lieut, 5th Cavalry

†IRONS, J. A.....1st Lieut. 20th Infantry
IRWIN, F. J.....2d Lieut. 2d Cavalry
JONES, T. W.....1st Lieut. 10th Cavalry
JOHNSON, J. B.....Captain 3d Cavalry
JACKSON, J....Capt. 1st Cav., Bvt. Maj. U.S.A.
JOHNSON, C. P.....2d Lieut. 10th Cavalry
JOHNSTON, J. A.....1st Lieut. 8th Cavalry
†JARVIS, N. S.....1st Lieut. M. D.
JENKINS, J. M.....2d Lieut. 5th Cavalry
KEYES, A. S. B.....Captain 10th Cavalry
KOEHLER, L. M.....2d Lieut. 6th Cavalry
†KELTON, J. C.....Col. Asst. Adj. Gen'l
KING, C.....Captain U. S. A.
KENDALL, H. M.....Captain 6th Cavalry
†KOOPS, C.....2d Lieut. 13th Infantry
KELLY, J.....Captain 10th Cavalry
KENNEDY, W. B.....Captain 10th Cavalry
LAWTON, H. W.....Captain 4th Cavalry
LANDIS, J. F. R.....1st Lieut. 1st Cavalry
LONDON, R.....1st Lieut. 5th Cavalry
†LEMAY, D.....U. S.
LEOSER, C. McK.....Late Capt. 2d Cavalry
†MARTIN, G. W.....2d Lieut. 18th Infantry
MANN, J. D.....2d Lieut. 7th Cavalry
MACDONALD, G. H.....2d Lieut. 1st Cavalry
McDONALD, J. B.....2d Lieut. 10th Cavalry
MOORE, F.....Captain 9th Cavalry
†MURRAY, A.....1st Lieut. 1st Artillery
MURRAY, C. H.....1st Lieut. 8th Cavalry
MERRITT, W., Brig. Gen.. Bvt. Maj. Gen. U.S.A.
MACOMB, A. C.....2d Lieut. 5th Cavalry
McCLELLAN, H. B.....Major Ex C. S. Cavalry
†McINTYRE, F.....2d Lieut. 19th Infantry
†McCOOK, A. McD.,
Col. 6th Inf., Bvt Maj. Gen'l U.S.A.
MIZNER, J. K.....Lt. Col. 8th Cavalry
MOYLAN, M.....Captain 7th Cavalry
MICHLER, F.....1st Lieut. 5th Cavalry
*MARTIN, H. McLANE.....
MILLS, A. L.....2d Lieut. 1st Cavalry
MACKAY, J. O.....1st Lieut. 3d Cavalry
MONTGOMERY, R. H.....Captain 5th Cavalry
MUNFORD, THOS. T....Gen'l Ex C.S. Cavalry
NORDSTROM, C. E.....1st Lieut. 10th Cavalry
NORVELL, S. T.....Captain 10th Cavalry
†NOYES, C. R.....1st Lieut. 9th Infantry
OLMSTEAD, J. A.....Captain 9th Cavalry
PADDOCK, R. B.....2d Lieut. 6th Cavalry
PADDOCK, J. V. S.....1st Lieut. 5th Cavalry
POTTER, C. L.....2d Lieut. C. E.
POND, G. E.....Capt. Q. M. D.
†PAGE, C.....Col. M. D.
*PARKER, D. W.....Late Lieut. 6th Cavalry
ROBINS, E.....2d Lieut. 3d Cavalry
RAFFERTY, W. L.....Captain 6th Cavalry
RODGERS, ALEX.....Captain 4th Cavalry
RODENBOUGH, T. F.....Col. U. S. A.
RIPLEY, H. L.....1st Lieut. 3d Cavalry
ROBERTSON, S. C.....2d Lieut. 1st Cavalry
†RUCKER, W. A.....Lt. Col. P. D.
RUSSELL, GERALD.....Captain 3d Cavalry
RUSSELL, F. W.....Late Lieut. 6th Cavalry
†RUSSELL, G. B.....Captain 9th Infantry
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JOURNAL

OF THE

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LEAVENWORTH, KAN.
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GENERAL JOHN BUFORD.

OF all the cavalry officers of the early years of the war, none stood higher than Maj.-Gen. JOHN BUFORD, and at the present time among the new generation of officers, as well as with those who knew him personally, his name is the synonym of excellence in the mounted service. Those who had the fortune to serve with him in the war are not surprised at the high place assigned him in history and by common agreement. His was a unique character. He was full of dash, without ostentation or parade. Quiet in his manner, but decisive in action. A strict disciplinarian, who had the respect and affection of his command. As a troop and battalion commander, Gen. (then Capt.) BUFORD was among the first of the cavalry officers of the "old army" to depart from the cast-iron rule of Martinetism, and to treat the soldier as a thinking, reasoning being. He took especial pains, as a troop commander, to dignify and elevate the non commissioned officers of his troop, going so far in the interior management of his command as to convene a board of non-commissioned officers for the adjudication of matters personal to the men of his troop. It is not necessary to indicate with what excellent effect a well-managed course of this character was pursued, nor need it be suggested that it is an experiment which not every troop commander could adopt with success.

In the present number of the JOURNAL the Cavalry Association presents to its members a good likeness of Maj.-Gen. BUFORD. It is from a photograph taken in the uniform of a brigadier-general. His commission as a major-general of volunteers was sent him by Secretary STANTON

while he was sick with his fatal illness in Washington. No photograph could convey a correct idea of his living presence. He was of medium stature, fair-haired, blue gray eyes, with a drooping, flaxen moustache, which almost concealed his mouth. Gen. BUFORD was fluent in conversation, and, though at times taciturn, was always approachable and pleasant to his officers and men. He was a superb horseman and neat in his attire, though he affected a carelessness in dress more as a protest against the gaudy display of some of his cavalry contemporaries, who indulged in tinsel and feathers, for whom his respect was not great, than because neglect of dress was natural to him. He despised ostentation and display of any kind, was gentle, genial and natural in social intercourse, but a very tiger when aroused.

It is not the intention at this time to enter into the details of Gen. BUFORD's life. It is to be hoped that a worthy pen may in the near future make this record for the benefit of future cavalry men. It is especially wished now to put on record facts as to the share that Gen. BUFORD had in the final success at Gettysburg — the part he took in selecting, and holding the field whose natural advantages gave our brave troops the victory that saved the country from invasion and final destruction. We quote from Bates' Battle of Gettysburg: "On the night of the 30th, Gen. BUFORD spent some hours with Col. THOMAS C. DEVIN, (one of his brigade commanders,) and while commenting on the information brought in by DEVIN's scouts, remarked that the battle would be fought at that point and that he was afraid it would commence in the morning before the infantry would get up. 'They will attack in the morning and they will come booming — skirmishers three deep,' said BUFORD, 'and we will have to fight like devils to hold our own until support arrives. The enemy must know the importance of this position and will strain every nerve to secure it.'

"The judgment of BUFORD was just, showing that he was possessed of remarkable discernment and penetration.

"Being well assured that the enemy was about to attack him, BUFORD was early in the saddle and had made the most imposing disposition to meet them of which his little force would admit. Had he had at his back the half million of troops, that a farmer's wife in reply to enquiries of a rebel officer had declared were in Gettysburg, he could have scarcely made one more so. In addition to being imposing, it had the virtue of being effective, and when the rebels came on 'booming, skirmishers three deep,' as BUFORD had predicted, they met a stubborn resistance.

"As BUFORD's men for the most part fought dismounted, the enemy at first took them for infantry and consequently moved tardily and with much circumspection, giving time for the first corps, which was now rapidly approaching, to come up, so from the opening fortune favored the

Union arms. A constantly increasing skirmish fire was continued for half an hour, when the enemy having brought up his artillery opened with much spirit. The guns of BUFORD answered promptly, and maintained the contest gallantly, preserving the delusion that he was well supported. The fury of the fight increased at every moment, and BUFORD saw that the weight of numbers bearing on him would press him off the field; but not an inch was yielded though he had every preparation made for retiring to Cemetery hill, when he could hold out no longer. It was a moment of gloom and anxiety to that true heart. Would he be left to his fate and be obliged to sacrifice that vantage ground he had striven so hard to hold?"

The history of the battle then goes on to recount the story of the arrival and deployment of REYNOLD's corps, and continues:

"The heroic BUFORD, who had first felt the shock of battle, and during the long hours of this terrible day, had held his troops on the flanks of the infantry, joining in the fierce fight as opportunity or necessity required, and who from his watchtower had scanned and reported every phase of the battle, was now at the critical moment a pillar of strength. His front was tried and the attempt was made to push past him along the low ground, drained by Stevens Run, when some severe fighting occurred. But he maintained his ground intact, and that admirable position, where the army at length fought and won the battle, was again saved.

"Indeed," says this history, "the spirit of BUFORD, like a good angel, seemed to be constantly hovering over the entire field of that first day. One of the best read of our military critics says of him: 'He not only showed the rarest tenacity, but by his personal capacity made his cavalry accomplish marvels, and rival infantry in their steadfastness, not only in the battle itself but afterwards, when deployed in the intervale, drained by Stevens Run, west of Gettysburg.'"

But we need not quote further. This is part of the record of BUFORD's cavalry division in one day's battle — the first day at Gettysburg. It is a record that reflects undying glory on BUFORD: A record that every cavalry officer may be proud of.

HOW OUR GOVERNMENT MAY BREED ITS CAVALRY HORSES.

BY ALBERT E. WOODSON,

CAPTAIN FIFTH CAVALRY.

OF all classes of men, and of all persons whose vocation connects them more or less with the constant use of horses, none should have a higher appreciation of the individual merit of such animals than the mounted corps of armies. The individual fitness of the horses of a cavalry regiment is a large factor in estimating its efficiency. Since then its efficiency is measured by the quality of its horses it becomes imperative that it be well mounted. The question of how to obtain the material to constitute the best mounts is therefore exceedingly pertinent. Applying this question in its practical bearing I choose for my subject — "How our Government may breed its Cavalry Horses."

I do not claim the merit of novelty for the suggestions I may make as to the establishment of a "Government Breeding Farm," for it is known that others, (including the Lieutenant General of the Army,) entertain views of their own on this subject; but for the manner of breeding and the selection of breeding stock, I may claim originality.

Whether it be a necessity at this time for the government to take in hand the active operation of a breeding establishment for such a purpose may admit of doubt, but I shall attempt to show that the necessity does exist and never heretofore in a greater degree than at the present time.

The difficulties annually met with by the department charged with the purchase of re-mounts for our service are by no means abating, but with each succeeding year, it is growing more difficult to obtain suitable horses, and their fitness becomes still more reduced below the required standard. Breeders have taken a new departure in horse-breeding; they no longer devote their capital and energy to breeding saddle animals but are being carried away with the popular craze for heavy foreign draft horses or standard bred trotters. The demand for saddle animals is being reduced; people generally ride less and drive more; railroads span the country in

every direction, and it is no longer a necessity to travel mounted. Some few ride for pleasure and for these, none but high priced well-gaited animals suffice.

Since in my opinion it becomes policy on the part of the government to lend its fostering care to the accomplishment of such an object I propose to show in what manner it may be accomplished.

First — How horses best adapted for the mounted service may be bred.

Second — The superiority of the animals selected for breeding stock, and the manner of their breeding to a fixed standard.

Third — A plan of a breeding farm with estimates of the cost of same.

Fourth — A comparison of the fitness of the animals bred to a certain standard with that of those supplied by purchase under the contract system

Fifth — A description of the different gaits of saddle animals and those best adapted for the cavalry service.

For the foundation breeding stock for this purpose there should be obtained by purchase in open market a number of native Indian pony mares selected for their fitness as dams, and as sires (proportioned to the number of mares) thoroughbred stallions of size not less than sixteen hands, physically and constitutionally sound, with ample bone and substance From the union of these would be acquired the female progeny to constitute the dams of the proposed standard-bred cavalry horses, in which we shall expect to find animals that when matured will prove all to be desired for the mounted service. In order to show the advantages to be gained by such a combination of blood it will be necessary to go a little into the history of the breeds of the animals selected. That of the thoroughbred is too well known to require elaboration. In their selection of sires we shall expect and may feel assured that they will impart to their progeny the good qualities that have rendered them so famous the world over. The crossing of them on other breeds of horses when carried on, has in every instance resulted in the improvement of the less pre-potent blood, for in speed, resolution and endurance, muscular development and density of bone, they surpass all other breeds and there is scarcely a race of horses but may be improved by a cross with them. This fact is almost universally recognized and nearly all the countries of the civilized globe have for years regarded the English thoroughbred or "blood horse" as the basis of all substantial improvement. Whether in admixture with the blood of the phegmatic draft horse or the more spirited trotter of American production, the influence of such blood is pre eminent and self-asserting, leading to a higher degree of perfection in the resultant progeny.

The term "thoroughbred" is the synonym of the highest form of physical perfection in all animals; applied to the horse it refers to animals

denominated "blood horses" from well established purity of lineage. We are informed that the lighter horses for speed, introduced into England previous to the reign of JAMES I, were Spaniards, Turks and Barbs. The Arabians were introduced in the latter part of the reign of QUEEN ANNE. Similar horses tracing their lineage from the same source were brought to Mexico by the Spaniards. The Arabian horses possessed undoubted beauty of form and grace of motion, but were inferior in size to the average thoroughbred, being rarely over fourteen and one-half hands high. The thoroughbred horse is purely a British production. At a very early day the rulers of Great Britain directed their attention to the work of improving the breeds of their horses by crossing them with the Spaniards, Turks, Barbs and Arabians.

From the Spaniards of Mexico descended to the American Indians of the western plains the foundation stock of their breed of ponies, which have been rendered still more diminutive in size by the vicissitudes attendant upon the conditions of their nomadic life, but as vigorous, hardy and enduring and as well adapted to all needs of their savage life and the uses made of them in Indian warfare as their remote ancestry of two centuries ago. This much of the history of the thoroughbred is given by way of showing the relationship existing between them and the Indian ponies of the present day. Asked why Indian pony mares are to be preferred as dams, I answer because they possess the qualities we desire to retain in our proposed standard in a greater degree than any other breed of horses; characteristics so marked that no amount of outbreeding would eradicate. All officers of experience on the western plains have had ocular proof of the superiority of Indian ponies over our animals in Indian warfare, their docility, activity, tractability and hardy endurance, combined with weight-bearing capacity, render them especially adapted for such purposes. I might mention as evidence of their ability to carry weight some instances often witnessed in our immediate vicinity—that of two and sometimes three "buck" Indians mounted on one pony, or that of one single animal drawing the lodge poles of a large Indian tepee, their ends strapped over its back with many pounds of Indian "penates," children and dogs on the travis behind. I once saw a single pony carrying the entire carcass of a large elk minus the head. The Osages, noted for the large size of their men, sometimes weighing as high as 250 pounds, are often seen mounted on diminutive ponies. I attribute this ability to carry great weight to their muscular development and density of bone. I know of no other breed of animals of equal ability in this line, according to size, except the Mexican burro, also of Spanish origin. This quality renders them well adapted for warfare purposes, for which they have been used from their earliest history. Why are they not, then, to-day as valuable for the foundation stock upon which to form a class of horses

required for our military service? I contend that from no other breed can we hope to obtain material of such excellence. Where can we find, in this country, animals that have exhibited qualities which so excite surprise and challenge admiration? As mothers they excel in the care of their offspring. Their instinct of self-preservation is wonderfully developed. This is exhibited amidst the winter's storm, when they paw away the snow to reach the nourishing grass or upon the arid sands of the desert, when, with unerring direction, they take the shortest route to the nearest pool to slake their thirst. The sagebrush of the plains or the cottonwood of the valley alike contribute food for them when none else is near. They readily adapt themselves to all conditions of life, and are at all times ready for faithful service. Why need I multiply proof of the good qualities of this hardy race?

Having in view that the laws of heredity teach us that "like begets like," we may safely calculate on the certainty of transmission of such characteristics to their offspring, when coupled with the selected sire, through succeeding generations. I hold it a fact that the Indian pony is more nearly connected with the blood of the thoroughbred than that of any other breed of horses in this country. It is, then, no violent outcross we shall attempt, but rather a reunion of the blood that, though emanating from the same well-spring of equine life, has through diverse channels followed its courses unmixed and unimpaired in its quality through more than two centuries, and it is now proposed to unite again those streams of divergence and combine in the progeny of such selected sires and dams the characteristics of both. In so doing we shall find no incompatibility to reconcile, but a happy union in the blending of the peculiar traits of both, each exerting its proper share of influence over the other; the exuberance of spirit in the thoroughbred gently toned by admixture with the less excitable blood of the Indian mare; with the speed of the former slightly reduced, but with no loss of vigor, endurance or firmness of bone or muscular development; with intelligence unimpaired, and size, with weight-bearing capacity, increased. It is from such union that we shall obtain suitable dams, which, when bred again to thoroughbred sires, will produce foals which, when properly broken and gaited, will leave nothing to be desired in our cavalry horses. Animals representing all the necessary qualifications, and as nearly approaching the desired standard as it is practicable to obtain by systematic breeding, and so superior to those acquired by purchase under the contract system that it will be readily apparent to all concerned, and cheaper to the government by at least one-half.

There can be but small doubt that animals so bred will retain the good qualities of their progenitors. "Every living thing brings forth its young after its own kind," in some "cases the exact counterpart of the parents,

in others slightly modified, but always showing more or less of the parent type." But a few days since an officer of the Association asked why it would not be practicable to obtain the same results from another course of breeding—naming a cross of Norman stallions on Indian pony mares, and their offsprings in turn on the thoroughbred. In answer to this, I have to say that if we attempt to obtain the same results from the selections of such sires and dams we may expect to meet with disappointment at the very outset Improvement in any species of domestic animals, conspire to make the work of creating a new type from heterogenious materials extremely difficult. In making selections with a view to perpetuating and variation from an established type, we must always begin with such individuals as have manifested a tendency to assume the desired form and peculiar characteristics, and transmit them to their offspring.

In coupling such animals, of a widely different character, and with such distant variations of breed, new elements of divergence would be introduced in the offspring. "The force of heredity is usually exerted to compel the progeny to adhere to the character which has become fixed in the species," rather than to follow the variations sought to be established, but in the selection of both parents, each more nearly representing the type it is desired to originate, the influence of heredity lends its powerful aid in favor of the perpetuation of the improved form.

"With a mixed and heterogeneous ancestry, representing various shades of divergence, progress in any given direction by selection, will, under the most favorable circumstances be slow and the results will frequently be anything but satisfactory." Thus am I supported in the selection of animals, whose departure from the standard desired to be established is reduced to the minimum, for I have shown that they are connected by ties of blood, as well as in peculiarities of form and distinctive characteristics, what is "bred in the bone" will be transmitted with unfailing certainty. "Beauty of form and feature, strength of force and intellect, elegance and grace of motion, integrity and honesty of character, susceptibility of culture and refinement, or boorish stupidity as well as all the vices are as clearly transmissible and inheritable qualities, as the color of the hair or the shape of the body in horses or cattle," and reasoning therefrom, we may safely count on maintaining the good qualities of the animal selected, in their produce which will in turn reproduce the traits and peculiarities of their race, modified perhaps to some extent by the new conditions which environ them, and these again into animals still better adapted to the new order, until in a few years our breed of horses would be so well grounded in the good qualities sought to be engrafted in them, that the "end would crown the work," and make our standard complete. Enough has been said to show how

our cavalry horses may be bred, and we now pass to the manner of breeding and rearing them.

It would require an appropriation by Congress of funds to purchase the necessary breeding stock, not to exceed $30,000.00, which would be sufficient to inaugurate the undertaking. This amount would cover all expenses connected therewith, including cost of stables, sheds and fencing, pay of employes, etc., for the first year.

It would require for location some military reservation in the west, of sufficient area for pastorage, paddocks, etc., (upon a portion of which could be cultivated and grown all the forage required,) and in addition thereto, facilities for watering the stock.

It would require four hundred Indian mares, and eight thoroughbred stallions, to be purchased in open market, and selected especially with a view to their fitness for breeding purposes, from the best animals to be obtained; stallions to be not less than sixteen hands, physically and constitutionally sound, with ample bone and substance; mares to be of good, solid colors—bays, browns or chestnuts, and not less than fourteen hands high.

An officer of the cavalry arm should be detailed as superintendent of the "Breeding Farm," possessing as far as may be, a practical knowledge of the following subjects.

The breeds of horses, the selection of breeding stock, the management of stallions and brood mares, the weaning, rearing and breaking of foals, and their subsequent training to saddle gaits.

A detachment of thirty-five cavalrymen, including two sergeants and two corporals, selected on account of their ability to properly break, ride and train young horses, and perfect them in their gaits under the saddle. There should be one civilian superintendent of farming, who should be experienced in the management of breeding stock, and four civilian employes as laborers, with one skilled veterinarian, a graduate of a regular medical college.

An increase in the strength of the detachment, would in time be necessary, proportioned to the number of animals reared, and the necessity for the detail of a full troop of cavalry in the begining might be deemed expedient. This breeding establishment shall be under the control and management of the superintendent, subject to the direction of higher authority.

It is expected that grass alone would supply all necessary forage for the brood mares and foals, supplemented during winter months by hay cut upon the reservation; reared on it the young stock would be far more healthy and free from the ailments which the use of corn engenders.

The reservation having been properly enclosed, the division of pastures should be arranged to accommodate fifty brood mares each.

Stallions.—Stables should be constructed conveniently near to each of these, for use during the breeding season. The breeding of mares to begin not earlier than May 1st to insure foals being dropped after April 1st.

The percentage of foals to mares bred, may be estimated at sixty per cent., though seventy-five per cent. has often been attained. The absence of reliable statistics in our country does not afford a means of determining what the percentage of foals for any given number of mares may be; this question, however, is removed beyond the realms of conjecture by the recorded results in the great breeding studs of Germany. "Taking the entire career of all the breeding establishments from 1859 to 1874, with an average of one thousand stallions and forty-two thousand mares per year, we find the results as follows:

Average percentage of mares in foal	67.7
Average percentage of live foals dropped	53.3
Average percentage of mares aborted and miscarried	4.8
Average percentage of mares dying or not accounted for	9.6
Highest number of live foals at Zirka, Province of Posen	62.
Lowest number of live foals dropped at Wiskrath, one of the Rhine Provinces	33.3"

Whether these figures will apply exactly to horse breeding in this country is of course not definitely known, but they accord in the main with the experience of those breeders with whom I have communicated.

It must be apparent that a limited time would elapse before any appreciable results would obtain or practicable benefits accrue to the government. It would take at least four years from the beginning to secure the graded dams from the first cross of the stallions on the Indian mares. These would be dropped as foals in the second year of the establishment, and at three years old would pass into the stud. Bred as three year olds, they would drop foals at four, these would be standard-bred and would be fit for assignment to regiments at four years old, after having been properly broken and gaited for the service. The education and training of these should begin as "weanlings" and carried forward, as it should be, until four years old; they would then have all the qualifications essential in cavalry horses. The fillies of the same age, being bred at three, would drop foals in their fourth year, and bred again would add another crop of colts in their fifth year, and thus, year by year, like results would obtain, according to the number of brood mares retained in the stud. All "culls" and unserviceable animal should be sold, as well as the Indian mares after a sufficient number of graded fillies for brood mares had been obtained. Then would come a time when there would be an excess of mares needed for breeding, and drafts therefrom should be sold, or sent to other breeding farms established in other sections of the country. If the number of brood mares was not kept within limits, a greater number of young animals would in time accumulate than the necessities of the service would require in time of peace, and exceeding the capacity of the one establishment to care for—for such contingencies proper timely arrangements should be made.

For the second generation of fillies, from standard bred mares, selected standard bred sires should be used. For this purpose a sufficient number of the young standard males should be reserved entire, and they would constitute the sires for future use. It would not be proper or expedient to use thoroughbred sires on their progeny of the third generation, for when they had sired a sufficient number of graded dams, the continuation of their use in the stud or their own progeny would not be desirable; while thoroughbred blood is most prepotent, we would not want too much of it; too much spirit with its accompanying nervous organization is not desired in the standard horse. The thoroughbred stallions having served as the means to accomplish the object aimed at, should then be sold.

A complete record of brood mares, stallions and foals, with pedigrees of each should be kept, date of service, birth of foal, sex, color, markings, etc. This would be very necessary to avoid the evils resulting from incestuous breeding, and to insure the intelligent subsequent mating of sire and dam.

Good judgment and careful management in properly mating sires and dams from now on, and in the education of the young animals reared, would undoubtedly be followed by success in the undertaking. If the results were encouraging and it should become necessary to breed a greater number of animals than the one breeding farm could supply, others in different sections of the country could be organized on the same principles.

In making selection by purchase of Indian mares, it should be considered that there is marked difference in the character of such animals, owned by the different tribes of Indians. My own experience shows that those owned by the Comanches are better as a class. They have generally owned the best horses of any tribe of "Plains" Indians. I have also seen some excellent Mexican mares, which would answer the purpose; they are descended from the same original ancestry, and possibly have had better care and more attention paid to their breeding.

I estimate the first cost of 400 mares, at $30 each	$12,000
Ten thoroughbred stallions, at $800 each	8,000
Expenses incurred in purchase and transportation of same	1,000
Total	$21,000
Add to this cost of fencing reservation, with subdivisions, paddocks, stables, sheds, etc	$ 5,000
Making a total cost of	$26,000
For salary of employes per annum—	
One veterinary surgeon	$ 1,000
One superintendent of farming	900
Four laborers, at $300	1,200
Total	$ 3,100

When we compare the cost to the government of the animals bred on such a breeding farm with the prices paid by the quartermaster's department, the difference will be largely to the credit of the former, to say nothing of their superiority. It costs the farmer about $70 to raise a common colt to the age of four years, and this without training or breaking to saddle gaits; with the increased facilities afforded by an establishment on the proposed plan, it ought not to cost exceeding $60 to the government for a far better and more suitable animal. The prices under the present contract system range from $125 to $165 per head, with cost of transportation added.

Now let us compare the relative merit and fitness of such standard-bred horses with those supplied by purchase: The experience of every troop commander shows that many animals are assigned to them utterly unfit, in many respects, for the service—animals better adapted for any other use than the mounted service, and, though required to conform to a fixed standard, possess a diversity of qualifications as to age, weight, height, size of head, length of neck, obliquity of shoulders, depth of chest, length of back and legs and size of feet that are truly remarkable. They seem to have been collected more with a view to dissimilarity in form and proportions than conformity to any established model. They might more properly serve to fill the demands for any number of uses, such as heavy wagon, cart or dray, carriage, coupe, light harness or street car purposes. I am not exceeding the limit of truthfulness in stating that I can select from my own troop animals representing the various qualities required in horses suited to each of the purposes stated. Now, if this diversity may exist in a single troop, what must it be throughout the cavalry service?

I have not named in the foregoing list saddle animals, because there are so few good ones in each troop that they are remarkable by their absence. But what more can we expect as long as the present system of purchase and inspection prevails? Capt. MOSES HARRIS, First Cavalry, in a paper read before the parent Association and published in its journal of March, 1888, forcibly represents the defects of the contract system of purchase, and his opinions are shared in by cavalry officers generally.

The allotment of funds for the purchase of remounts to each department rather seems to be based on estimates for a certain number of horses to be supplied at a certain price per head, and when the contracts are let the animals are found to fit the price. The contractor sends out his agent and he selects such horses as he can afford to buy, leaving him a handsome margin on his price to the government; he buys everything in the shape of a horse that he thinks will pass muster; his object and his only care is to pick up animals that can run the gauntlet of inspection, and as a matter of fact many inferior ones get in. Now, many of these would be fully worth the prices paid for other uses than the cavalry service. We receive

some excellent ones for the plow, or the cart, or the threshing machine, but comparatively few fit for the saddle. Watch the sales of condemned animals and see how the farmers and freighters vie with each other to secure this or that one, because it would make such an excellent draft or plow horse; view him from a cavalryman's standpoint and behold a great clumsy, ungainly brute, a mixture of Norman, Clydsdale or English draft and plug, with feet remarkable for size and ponderosity, condemned for worthlessness or chronic ailment, constitutional or hereditary; the contractor received just as much for him as he did for the best of the lot furnished, and he represents just the value of a good serviceable horse. There is another kind which ought to (but does not) find its way out of the service by the same route; I mean that *bête noire* to all cavalry soldiers, the one that cannot be made to walk in ranks. On the long day's march from camp to camp he jogs his everlasting jog, to the great discomfort of his rider, who, worn and weary, laments his fate and perhaps wishes "the devil had flown away with him" ere he "joined the cavalry"; if maledictions could affect it, all such as these would be consigned to the antipodes of "horse heaven." The poor devil of a recruit generally gets this one, for such are always given the go-by and left for the last one to join. It is "Hobson's" choice with him, and it is either this one or desertion.

The average time during which our horses remain serviceable is less than six years.

Dr. D LEMAY, veterinary surgeon, in a recent number of the *American Veterinary Review*, states that "Of ninety remount horses purchased in 1885, a casual professional examination made on their arrival at their posts revealed seventeen of them affected with various chronic diseases, which not only rendered them worthless for military purposes, but reduced their pecuniary value at least seventy-five per cent. below what they cost the government."

"The condemned list among our animals presents annually a far higher percentage than that of any other civilized army, requiring a yearly appropriation of two hundred thousand dollars

Many horses are held in service even when no longer serviceable, for troop commanders have hesitancy in submitting them for inspection and condemnation; because by inference the impression might prevail with those in authority that they were in some way responsible for their unserviceable condition, or had not exercised proper care of the animals under their charge, and as long as they can carry a trooper after a fashion, they hold the place of a better animal, and wax fat on government grain. They are rather a hinderance to the effectiveness of any troops. Whenever it is practicable to mount it, without calling them out, they are permitted to evade service, while other and better ones do their work. The

men shun them and the captain who wishes his troop to make a creditable appearance on parade or at battalion inspection, prefers to have them out of ranks.

As a matter of fact but few of the horses purchased by the quartermaster's department have any suitable, well established saddle gait, and there is seemingly but little attention paid, previous to purchase, to this most important requisite. The contractor may submit any horse for inspection of proper color, size, age, etc., and apparently sound and free from blemish, and it will generally be accepted regardless of qualifications as to saddle gaits; of course the animal must walk, trot and gallop, but on the quality of such gaits but slight attention is bestowed. He might be able to walk but two and a half miles an hour, or trot hard enough to loosen a trooper's teeth, or labor in his movements at the gallop like his near relation the Norman Percheron, but it matters not, down goes the good American dollars for this new acquisition and pop goes the U. S. Government brand on his shoulder, that binds him to servitude for the balance of his natural life, unless sooner brought before an officer of the Inspector General's Department.

Nearly all our best saddle horses have a large admixture of thoroughbred blood, for that gives them style, energy and endurance. Kentucky and Tennessee have quite a number of noted saddle stallions, the "get" of which have usually been well adapted to the saddle and if especial attention had been paid to the business of breeding, and the descendants of these stallions had been bred with as much care as has been taken with trotting and running horses, we might ere this have had a well established line of saddle horses.

There are three gaits possessed by nearly all horses to some extent; the walk, the trot and the gallop, some are fast walkers, but trot and gallop badly, while others walk indifferently well, but are great trotters, then we have another class by no means common, which possess as natural gaits, the walk, the pace and the gallop, the pace being the distinctive characteristic. These four gaits may be regarded as natural gaits.

As artificial gaits, there are four, the fox trot, running walk, rack and single foot. The fox trot is simply a modification of the *true* trot, and while it is not a true diagonal motion it departs from it simply in the fact that the forefoot touches the ground slightly in advance of the diagonal hind foot. It is the slowest of the artificial gaits, but it is above all others, an all day gait, and a horse possessing it to perfection will perhaps make a longer journey from sunrise to sunset, under the saddle, than at any other gait. This in my opinion is the gait "*par excellence*" for the cavalry, when more rapid movement than the walk is desired. It is easily acquired by any well bred intelligent horse under proper training.

The running walk is simply a modification of the true trot, but the

head is carried higher than in the fox trot or ordinary walk, and the hind foot takes the ground in advance of the diagonal fore foot, which breaks the concussion; a closer rein is generally held than in the fox trot and the pace is a faster one, and may be carried to a three minute gait. In it the poise of the foot, is such as to give the horse more of a climbing motion in front. In it the sound of the footfalls is not unlike that of the ordinary walk quickened, and the feet take the ground in the same order. It might be described as a variation of the true walk by imparting to it a bounding or elastic quality, in fact a walk on a run, if such a contradictory description is admissible.

The rack is a modification of the true pace, in which the hind foot touches the ground in advance of the leading fore foot.

The singlefoot cannot be classed as either a diagonal or a lateral gait, it is exactly intermediate between the trot and the pace; each foot seems to work independently of association with either of the others, and the same interval of time elapses between each footfall. It is a fast gait and can be increased to the rate of a mile in three minutes.

These four artificial gaits, in connection with the four natural ones, constitute all the requisite gaits of trained saddle horses, only four of which may be said to be essential in well-broken cavalry horses—the walk, fox trot, true trot and gallop.

I have followed very closely the description and analysis of the saddle gaits, given in an article which appeared in the *Breeders' Gazette* of October, 1887, as being the best description of the different saddle gaits I have ever seen, and I have described the gaits at length to show to what extent the education of a good saddle horse may be carried. Too much cannot be said on the necessity of our horses being well gaited, and, though the artificial ones do not necessarily constitute a part of their training, they are all the better for the possession of some of them, and again, I emphasize the *fox trot*. Long continued marches at the walk are tiresome to man and horse. The fox trot relieves and rests horse as well as rider; it requires no increased exertion, while it increases the rapidity of the movement five or six miles an hour. If the men were mounted on horses having this gait they would not exhibit disinclination to keep the trot, for it is regular and steady in its rapidity.

The difference between a well-gaited horse and a rough one is more readily appreciated by cavalrymen than any other class. It is the long, weary days' march that engenders fatigue, with loss of temper and energy at the end, and by how much is this condition enhanced when the trooper has been mounted on a roughly-gaited animal; besides, his efficiency is impaired, and, if called for other duty, he is not in condition to perform it with alacrity and prompt obedience.

Then let us unite in the request for well-gaited animals. It is believed that, while the present system *does* prevail, it is possible and practicable for the quartermaster's department to do this. It may slightly increase the cost, but it will add to the comfort and effectiveness of our service, and, I believe, will lessen desertion.

I may be pardoned for referring to my own experience in the selection of cavalry horses, having served on a board for that purpose, when eighty per cent. of the horses presented for inspection in open market were rejected for sufficient reasons. I have been present as a spectator at an inspection of horses purchased under the contract system, when I had an opportunity to witness the methods of examination and the test to which animals were subjected to determine their fitness for the service, and I can state that their examination as to the possession of suitable saddle gaits was cursory and incomplete. I hold that it is necessary that the animal undergoing inspection be ridden sufficiently to intelligently determine its fitness in each individual case.

From the government breeding farm should come animals having all the good qualities of trained cavalry horses, broken to ride and broken to saddle gaits; to walk four miles within the hour, to trot smoothly, to canter gracefully, to gallop well, and, if need be, to run for a man's life when duly called; of kind, tractable disposition, easily controlled on drill, parade or under fire, in ranks or on the skirmish line, in the stable or on herd; intelligent, muscular and substantial, courageous, fearless and enduring, if need be able to subsist for a limited time on grass, to endure thirst, winter's cold or summer's heat—for these qualities they should inherit. For these qualities were they bred, and such we may reasonably expect them to retain. In addition, we may count on their being sure footed, quick, active and wide awake, without sluggishness or stubbornness. From their breeding we should expect them to be lithe in neck, heads rather small, wide between the eyes and full in the forehead, with erect, pointed ears, indicating intelligence and alertness, and, lastly, of size sufficient to carry all the weight required. Their education to saddle gaits should be easy to impart, with reasonable care and patience. Supplied with such animals nothing in them would be left to be desired, and the very highest degree of efficiency of cavalry troops would be the more readily attained, for they would be fitted to perform the work required of them under all conditions in the best manner possible.

In conclusion, I believe that the advantages which must follow a course of systematic breeding will fully justify the experiment.

The yearly appropriations for purchase of remounts aggregate a large amount, running into millions in the course of a few years. When the actual cost of these animals is contrasted with that of those purchased during a period of five or ten years, the difference in favor of the breeding farm would be sufficient to repay all appropriations and operating expenses, and leave a large balance to its credit.

It is by comparison that we judge of the value of any animal. Now, if this class will do more and better work and cost less to the government than those purchased, it becomes self evident that they are worth more money. Indeed, it may be safely affirmed they will cost less than one half, and our cavalry regiments will be mounted on superior animals, whose qualities have been generated in the blood until they have become hereditary.

Other governments have preceded us in such enterprises, and their breeding studs have passed beyond the point of experimental ventures to that of assured success. Why should we delay to follow their lead, as well in the matter of breeding our own horses as in the adoption of new model arms and munitions of modern warfare?

Why need we delay, while the necessity annually becomes more apparent?

How to begin it, where and to what extent, are subjects that may well engage our most careful attention.

SOME FRENCH IDEAS ON CAVALRY, DRAWN FROM CAVALRY IN COMBAT—GENERAL T. BONIE.

BY FREDERICK S. FOLTZ.
FIRST LIEUTENANT 1ST U. S. CAVALRY.

AFTER the disaster of '70, the French cavalry, yielding to the instinctive impulse of the vanquished, made haste to adopt in the most wholesale manner the regulations of the victor. They borrowed from the Germans their ideas, their principles, their methods of remount, and their fighting tactics; and yet, in spite of much progress, the cavalry is still—according to the opinion of neighboring powers—the weak point of the French army.

General BONIE, believing that the French school has no reason to bow down before the German, takes up the gauntlet for his nation, and inscribes on his shield this device: "THE FRENCH CAVALRY, HANDLED ON FRENCH PRINCIPLES, IS WITHOUT RIVAL IN COMBAT!" In proof of this proposition, the General proceeds:

First—To a study of the present French tactics, and, consequently, of the German tactics of which it is a copy.

Second—To a study of the cavalry under the First Empire, and an *expos*é of the French tactics of that epoch.

Third—To a study of the cavalry in the last war, and an *expos*é of the modifications which modern inventions impose upon the tactics of the arm.

PRESENT TACTICS—UTILITY OF A NORMAL ORDER OF COMBAT.

A normal order replaces the vague, uncertain, and unforseen, by principles, if not invariable, at least almost always applicable; it gives greater mobility and more rapid attack by avoiding the waiting for orders; and, lastly, it saves us from exclusively relying upon the genius of the chiefs, who, after all, cannot be everywhere.

The infantry has practically realized this normal order, but not so the cavalry, and for the following reasons:

For the infantry all ground is practicable. The space, the nature of

the ground, will be more or less favorable to the normal disposition, but in general, the disposition can be taken. Hedges, trees, houses, ditches, which stop the other arms—far from paralyzing the attack of the infantry permit it to make its way under cover. Is it threatened by cavalry, the same formation may still apply, since it is only necessary to close up the intervals.

To resume: The infantry has found a normal fighting formation—*always the same, simple and easy to assume, lending itself easily to all kinds of ground, applicable to the different cases which may present themselves in war, to all the hypotheses of action, whether against infantry, artillery, or cavalry.*

Has the cavalry found a similar formation? No.

Its formation varies according as it is to attack artillery, cavalry, or infantry; it does not lend itself to every kind of ground, since the obstacles that shield the infantry shatter the lines of cavalry whose power lies in their union and in their shock.

A brigade having a front of 600 meters, a division will require 1,800 or 2,000 meters front, (and this, in every direction, for there is no certainty as to the direction in which it may have to act).

Such open spaces are hard to find, and we cannot, as in mediaeval times, repair to a field of arms to have our quarrel out.

To these considerations, we must add another, and a weighty one. The enemy must be left uncertain as to the point of attack; otherwise, the surprise and the unforeseen are lost, and it is exactly these two qualities that make the arm marvelous in its results.

Would the issue of a duel be doubtful where one of the duelists was well up in all the arts of fence, while the other had but one thrust, well known, and always the same?

To satisfy these conditions would involve a contradiction. On the one hand, a normal order presents many advantages; and on the other, it allows the enemy to guess the point of attack. Consequently, you will say the chiefs of cavalry must be quick to take in the situation, and ready with appropriate orders for every occasion; and to their judgment everything must be left. This is to declare that the handling of the arm requires exceptional qualities which will be rarely found among those who command it.

This is not the opinion of the author; the problem, notwithstanding its apparent difficulty, is easy of solution, if we adopt for the cavalry, principles very simple, rules very few in number, very easy of application, admitting of certain and rapid execution, and in accord with the inherent qualities of the French character.

Does the present Franco-German tactics conform to these requirements?

FRENCH TACTICS, COMBAT FORMATION.

For a division of cavalry, the normal fighting formation laid down, comprises nine lines of unequal strength. The first line delivers the blow and is supported by the second, while the third forms the reserve.

The distance between *échelons* varies according to circumstances. The second and third lines extend beyond the wings of the first line (one to the right, the other to the left,) to protect the flanks, which are considered the weak points of cavalry.

The three lines detach combat patrols, and the squadrons send out ground scouts who move in advance of the front.

The artillery which was massed 150 paces behind the center of the first line, moves to the fighting position which has been indicated to it.

As soon as the general of division, resolved to give battle, has given his orders, the chiefs of the first and second lines enjoy complete liberty of action.

In the attack made by the several lines, as soon as the intervention of flank guards or offensive flanks is necessary, the squadrons of the wings, without waiting for any order, should detach themselves very rapidly from the line.

A brigade would assume a similar formation.

This, then, is a sketch of the normal combat formation of cavalry against cavalry.

The dominant idea of this disposition is, that by flank attacks alone, can a decisive character be given to the cavalry combat; and hence the object of manoeuvre is to gain the flanks of the enemy and to defend our own.

The value of this formation depends, then, upon the correctness of this estimate of the power of the flank attack.

Against infantry or artillery, the flank attack is unquestionably most certain, we thus avoid a part of the fire; we envelope the enemy, strike him in rear and force him to face about to reply by his fire; and if, at this moment the shock occurs, the chances of success are great.

In a cavalry combat, the conditions are quite different; we have to do neither with motionless artillery nor with slow moving infantry.

The first precept inculcated in a cavalry leader is *to be the first to attack*, and (if he has allowed the adversary to take the initiative) *to anticipate him anyhow in the charge!* This principle is so inimitable that the regulations say, and properly: *"The chief of cavalry will not forget, that, of all the faults he may commit, one alone is infamous in action."*

The hypothesis of a line of cavalry remaining motionless to receive the shock being therefore inadmissible, we can discuss the flank attack with reference only to lines moving to the encounter.

The regulation says, "For the flank attack we should seek to strike the wing of the enemy with the center of our line."

Suppose a regiment to have succeeded in striking thus; of the four squadrons, the two that pass in front of the enemy will have a part of their troopers charging into space, and the other men will be inferior, in ballistic shock, to their adversaries, for they are taken in flank by the chests of the enemy's horses and have every chance of being knocked over.

Must we then seek to attack exclusively at the back of the moving line?

Let us see; to fall on the rear of the enemy, the squadrons will have to make a change of front, which cannot be done at too great speed; and it will not be possible to resume full speed until the direction of the enemy has been obtained. Meanwhile, the latter is increasing his speed; the shock with our main line takes place before he is taken in rear, and our first line, charging through, finds itself face to face with friends, meets its own flank attack!

If however, the regulation flank attack has no chance of success, it is otherwise when used to disengage a repulsed line. In this case success is almost certain, since we fall on the pursuing troopers of the enemy, dispersed by the shock and with horses fatigued by the supreme efforts of the charge, taking them in flank and rear with our fresh animals.

The flank attack also finds its use in the attack of bodies in process of formation or changing position.

Contrary to ideas now current, the author then lays down this principle:

A line of cavalry that is marching, deployed, to the attack, must not think of its flank. Let it do its duty; that is to say, let it rush upon the enemy with speed and ardor. Its flanks will have nothing to fear, since the mêlée will occur before they can be taken in the rear. In any event, once started for the attack, it should be absolutely forbidden that any body from the wings should detach itself, of its own accord, to meet an attack or to make one. It is for the *échelons* in the rear to take this role, but everything that is thrown forward in the line should arrive without wastage at the target, so that the chief may be certain of the effect he will produce.

The leader of a charge should not have to watch his flanks and notice what is going on about him. His objects should be simple and easy to attain, demanding only energy—to throw himself on the enemy without allowing him time to see where he is.

The arm is difficult to handle, but with simple methods, like those of the First Empire, many of its chiefs are capable of managing it; while, on

the other hand, the present formation of three lines, not under control, prevents the development of its special qualities.

With the three lines so widely separated all unity of command disappears. We have three separate brigades or three separate regiments, each acting under its chief, while the superior commander is helpless as to modifying orders previously given or issuing new ones to meet new requirements.

The exigencies of cavalry combat can be satisfied only by concentrating the force in the hands of the general, leaving to his lieutenants nothing but the rigorous execution of orders received.

GROUND SCOUTS.

"In the vicinity of the enemy," says the French tactics, "the squadrons are preceded, at 200 meters, each by two troopers, who are to signal obstacles which might stop the advance.

"At the moment of attack the role of these scouts has a special importance in preventing the cavalry from charging on impracticable ground."

"The cavalry must not rush blindly over unknown ground," says Gen. BONIE, but he urges the following objections to the method of scouting adopted:

The swarm of scouts will reveal the presence and even the force of their main body.

When the line is moving at rapid gait (trot or gallop) these scouts can not give the required information. The rapid gait, before a charge, begins at 900 meters, and keeps continually increasing in speed. If the two scouts before the squadron fall, is the squadron to halt? Their horses may have been shot or have been tripped by a rabbit hole; there may be no obstacle before the squadron. Again, when once the gallop is taken (600 meters from the enemy) there can be no more question of stopping; the scouts will be too soon overtaken to give proper warning.

Then, the swarm of scouts before a line marching to the charge may be a veritable cause of disorder, fallen horses and men and wounded animals breaking up the ranks in rear. And, finally, these scouts must, at the last moment of excitement, be expected to find their places in ranks!

This role should belong either to isolated patrols or to the combat patrols, while they are seeking contact of the still distant enemy. They have then the necessary time to look up favorable ground, and can report when they come in. But the cavalry once started, it is too late, we repeat it, to think of accidents. Nothing must hamper the dash. "Heaven help those whose horses fall!"

ROLE OF THE LINES—FIRST LINE

Destined to deliver the first blows.

The regulation provides for three cases—

First.—The first line equals the enemy's line.

Second.—The first line is superior to the enemy's line.

Third.—The first line is inferior to the enemy's line, the latter occupying a more extended front.

To each of these problems there is a solution indicated.

"Time wasted!" cries the author, "each second lost, diminishes the chance of surprise!

"What matter all these situations?"

To attack first and at once—there is the only principle; and it needs for its application only boldness and energy—qualities eminently French.

"A regiment in line charges a brigade in line. So much the better; they will give account of double their number. The four squadrons are in fact equal in force to those that they strike, and the remaining four squadrons of the enemy, charging into the air, will find themselves with winded horses, at the mercy of the second *echelon*.

"Even now, the wings are safe; they are melted into the enemy at the moment of the shock, and cannot be taken in flank by those that overlap them."

The order from the general of division is simple: "Start for the objective that I indicate to you; charge home, straight at it, without thought of your flanks, and crush the obstacle; the rest is my affair." The execution is even more simple. This is the old French principle, it has always given us success in cavalry combat, and nothing better has yet been found.

THE CHARGE IN WALL.

The two counter currents of opinion on this subject may be stated by the following extracts:

Principles of the Regulations of 1876.—"The cohesion, necessary in the preliminaries of the attack, is less necessary in the charge proper. It is important, in fact, that at the command *charge!* the bravest troops riding the best horses, should not be checked; and that the individual valor, which is to finally decide the success of the charge, should leave, to each, all the advantages of his audacity, tenacity, strength and skill."

Principles of the Regulations of 1882.—"Hold to the most absolute cohesion in the charge because it is by the valor, impetuosity and audacity of the whole body, by the example of the officers, by the action of the file closers, by the moral backing of the supports, and, above all, by the maintenance of order and cohesion, that we assure to the shock an irresistable power."

The object is the same; the two factors are speed and cohesion and if they could both be obtained, at a maximum, at the same time, there would be no discussion.

But with the "wall," the speed will be that of the slowest, most fatigued horse—in heavy ground, hardly a hand gallop.

The boldest riders must then slacken their speed to the gait of the most tired. This charge requires constant practice; it ruins horses; and skill acquired in it, will be lost in a few weeks of campaigning.

Finally, the divergence of opinion applies only to the charge proper, all agreeing on cohesion up to that point. The command, *charge*, is given at fifty to sixty paces from the enemy; there remains, then, but twenty-five to thirty meters to traverse; the fastest horse will gain but two meters in that distance, and the hole he left in the "wall" will be stopped by the rear rank.

The cohesion will, then, be about the same in each case; but, in one case, you allow the hand to rein in, under pretext of alignment; and, in the other, you leave full play to individual dash.

On this short finish of twenty-five meters, we want, not men reining in for alignment, but horses with free heads, at full speed, maddened by the spur, and the shout of *charge!*

The more timid men may close their eyes; but, borne along by their mounts, they will be carried away in the mass by the more brave. As to these latter, among which will figure the officers, they will throw themselves upon the enemy's line, which will be broken up by these individual wedges, each one making its hole and shattering the obstacle.

This is the true French charge which led us to apply to the bravest, who led the others, this fanciful adage: "It is always the same fellows that get themselves killed."

Thus did MURAT charge when the Cossacks, astounded at this fury, reined in their little horses, and stood up in their stirrups to clap their hands in applause.

This charge can always be obtained, even with squadrons out of practice, as also with reservists with whom we may have to fill our ranks. It is, then, the only practical one and it accords with the French character and qualities.

It is the charge which caused it to be said, "The French cavalry is the worst mounted in Europe; it is also the cavalry that rides worst. Nevertheless, it remains the most terrible because it charges at full speed."

THE SECOND LINE.

Its principal mission is to support the action of the first line, but the action of the two lines is successive.

The regulation here again indicates various hypotheses which the chief of the second line must be ready to meet. Is this necessary?

To consider the two most important ones, viz:

I. *The commander of the second line contributes to the success of the first by attacking the first line of the enemy in flank.*

This the author considers inadmissible, as the second line, being so far in rear of the first, can not make this flank attack in time; the first line will have struck the enemy and all will be over before the second comes up.

II. *The first line is repulsed.*

"The enemy, disunited by the pursuit, will be charged in flank," says the regulation; and five separate and more or less complicated evolutions are indicated for carrying out this single provision.

"Too much complication and drill," says the general; "too much time lost. the mere nomenclature and definitions, impose a severe labor to acquire them. It is a veritable Chinese puzzle, certain to lead to immediate errors.

Give us few evolutions and let these be heroically simple, quietly understood by all and without chance for hesitation."

The rôle of the second line is too complicated.

THIRD LINE.

The third line constitutes the reserves and remains in the hand of the general of division. It should, like the other lines, have the strength of a brigade, for it must play the role of first line should the enemy attack in the flank where it is posted.

The regulations, however, reduce it to a single regiment by detaching two squadrons to support the artillery and two more to follow closely the center of the first line and fill the gaps.

The author thinks the rear ranks should be sufficient to secure a solid front, and calls this a return to the three and four-rank formation of the middle ages.

The third line is too far away to be of use in case of necessity (400 meters behind the second); it will not be able to strike its saving blow at the moment when the line is yielding; it will arrive only after the line has yielded and is falling back in confusion.

THE MODERN IDEA.

The formation and the rôle of the lines demonstrate that the principles at present in vogue are absolutely contrary to those that develop the powerful qualities of cavalry.

To what, then, can we attribute the rage of this German method?

Is it the novelty, the fear of falling into the rut of routine, the desire for progress, the hope of being the pioneers of the future? This is, indeed, a fine rôle.

But is this method, in reality, a new one? Let us make a comparison.

Here the author uses the parallel column with startling effect. On the left we have modern tactics (so called); on the right ancient tactics. Paragraph by paragraph we follow the comparison; surely, we are comparing two editions of the same tactics. Ground scouts; flanks, offensive and defensive; reserves; division into three lines; first line; second line; distance between lines; exercises and manœuvres against a supposed enemy, a marked enemy, a represented enemy.

The principles are identical. We have been comparing with the military regulations of the Emperor LEON for the year 886. No misprint: for the year 886.

"Our new regulations, then, date back ten centuries!"

THE FIRST EMPIRE.

Because we were beaten and humiliated in 1870, is it really necessary to copy our neighbors and adopt principles as ancient as the tombs of the PHAROS?

"There is in our annuals an epoch that eclipses all the past—the First Empire. Let us look at that."

General BONIE then gives an exhaustive review of the action of cavalry under the first empire—Marengo, Austerlitz, Schleitz, Saalfeld, Jena, Hoff, Eylau, Friedland, Eckmühl, Essling, Wagram, Niemen, Smolensk, Moskowa, Montereau, Fleuris, Ligny and Waterloo.

From this mass he deduces the conclusion "that during the whole of this period the French cavalry (against all foreign cavalry, without exception,) has known nothing but victory. Employed either in deep columns, as an irresistable mass, breaching and overthrowing everything, or in thin lines, acting by regiment or brigade, we find but one and the same result—always success! And yet our cavalry was worse mounted and rode worse than that of our enemies, which was, as at the present day, remarkably skilled in manœuvreing!"

TACTICS OF THE FIRST EMPIRE.—DISTRIBUTION OF THE CAVALRY.

Under the Empire, this cavalry ceased to be as formerly, invariably on the wings. It was placed, united, where it could best utilize its power for the offensive. There was, therefore, no fixed distribution. Every army corps had some cavalry, but besides this, there is a general *reserve stock of cavalry*. The cavalry of the army corps might be increased, diminished or even entirely withdrawn, during the battle; and, in the same way, the strength of the cavalry reserve would vary during the action.

Apparently MURAT had an enormous mass of squadrons under his orders, but, in reality, this command was but momentary; limited to the

time necessary to execute a charge as at Eylau, where he charged with eighty-four squadrons. In principle, the reserve was but a stock of squadrons.

The Emperor hesitated long, before forming his reserve cavalry into a corps, and when, at last, he did so, many opportunities for action were lost, because the chiefs did not like to have their units detached from their orders, and because the handling of the masses required exceptionally large fields.

FIGHTING TACTICS.

These were remarkably simple. The principle was: The attack, always attack, rapidly and at full speed. To attain this, they first grouped all the force in the hands of the chief; second, manœuvred by methods simple enough to be followed without error or hesitation.

To await the time of action, the regiments were massed in close columns composed of squadrons deployed one behind the other.

The battle formation for brigade or division comprises two lines: line of attack and line of reserve.

The second line behind the first, or overlapping one wing. With three brigades, two were in first line, the shorter second line facilitating the rally of the first line behind its wings.

The role of the first line was the charge, always deployed straight to the front, but not with the entire line at once. The chief first tried the enemy with a brigade or a regiment, and watched the results before successively engaging the necessary forces.

His orders to his subordinate were very clear: "There is the objective; go at full speed, without thought of your flanks, and overthrow everything." If the first and second attacks failed, the chief placed himself at the head of what remained and led it to the charge.

The second line, with the rôle of support, followed the first at a distance of 200 to 250 paces, 100 to 125 meters, (the modern tactics put 200 to 300 meters between the first and second lines, and 400 meters between second and third).

Where a number of divisions were acting together, each one was formed on two lines as above; the second division was in rear of one wing of the first, the third in rear of the other and farther back, and so on. Save in the exceptional cases of the charges of deep columns at Eylau, Ratisbon and Waterloo, the divisions engaged successively and reformed in rear of the supporting *échelon*.

Note that the divisions flanked each other, but that each unity was separate, with its two lines closely grouped and in the hands of its chief.

Evolutions.—To break from column for deployments, etc., the squadrons broke into column of platoons and formed front into line.

To move to the right or left the squadrons broke into column of platoons and either formed line to the left or right, or changed direction and formed front into line.

Changes of front were considered too slow and too complicated, and were limited to a quarter or a half change.

Flank Attacks.—These were parried very simply by the second echelon, which, by a charge straight to the front, would strike the enemy while still unsteady, from the manoeuvre he had just executed to gain his position.

The flank attack was used not against a charging line, but to disengage a line repulsed and pursued by a disordered enemy, or, again, against a massed body, or against a body in process of formation.

The rally so necessary, whether the charge is a success or a failure, was considered as of the first importance, and the official reports of the engagements prove that the squadrons were thoroughly drilled in rallying promptly.

The evolutions were so simple and easy that they could be executed with horses of average training, and with very ordinary horsemen. In proof of this, in 1814 and 1815 France was invaded by all the cavalries of Europe, well mounted, with many old troopers, and finding, on French soil ground very favorable to their manoeuvres. The French cavalry, on the other hand, (annihilated in 1812) had nothing but conscripts in the ranks, and yet it continually whipped the enemy!

The secret? Speed, and boldness in attack were the two factors. The first obtained by an almost childish simplicity of movements; the second, inherent in the national character.

And thus, by bringing into play their personal qualities and leaving to the enemy the refinements of evolution; in spite of the riding of the Prussians, Russians, Austrians and English; in spite of their marvelous manœuvreing, the French cavalry, bad horses and bad horsemen, knew nothing but victory.

Its chiefs understood that what is one man's meat is another man's poison, and that, by handling Frenchmen on French principles, a result will be attained that cannot be expected from foreign methods.

Have then circumstances changed?

Let us turn to '70.

CAMPAIGN OF 1870.

The author considers only the actions before the fall of Sedan and of Metz. In these actions of the cavalry of the Army of the Rhine, we have to do with regular cavalry formed and trained in time of peace. In the second period, however, the cavalry ranks were filled with raw levies and untrained horses; and, in view of the point which we wish to determine, the study of this phase would be useless.

As to the attack of infantry and artillery our study is soon ended. We find blind devotion followed everywhere by defeat, because of neglect of the principle, *that unshaken infantry, in good position, must not be charged.*

Froeschwiller and Beaumont are but two of the many illustrations of this.

But with the cavalry combat, (cavalry against cavalry,) the result was different.

The General reviews Rezonville and Mars-la-Tour, mêlées as terrific and bloody as any that can be cited under the Empire

The report of the Prussian staff ended thus: "The introduction of a fresh division of French cavalry completed the *rout* of the last German squadrons."

We have, then, the right to conclude that, in the present as in the past, "The French cavalry, handled (and here is the point) according to French principles, has nothing to fear from the German cavalry, since it has always beaten it.

REQUIREMENTS OF FUTURE WARS.—EXPLORATION.

Marvelous and unrivalled in combat, the French cavalry has always allowed much to be desired in its service of exploration and advanced posts. "Here we must not imitate the Empire."

"The reconnoissances necessary in war were always badly made in our army," said the DUKE OF ROVIGO.

Austerlitz, Wagram, Smolensk, Moskowa, Ligny, Waterloo, furnish examples of French failures in this particular.

But the other European cavalries were also beneath the requirements of their mission, from this point of view.

In 1866 the Prussians and Austrians were completely in the dark at Koniggratz.

In 1870 the Prussians, even when victorious and unopposed by French cavalry, repeatedly lost contact with the enemy for days at a time.

The subject is too large to be treated by the way, and is reserved for a separate discussion.

BATTLE.

The immense space covered by modern infantry fire has affirmed the principle, adopted long ago, that cavalry should not charge unbroken infantry.

It should, however, be held as near as possible to the point where it may be required; and, at the moment when the enemy's infantry is wavering, it should charge from one of the wings of its own infantry, leaving the field of their fire open as long as possible.

But while the cavalry has lost some of its importance in the infantry battle, it has widened its rôle with the artillery.

Gradually losing its heaviness, the artillery has attained a mobility approximating to that of cavalry; add to this the precision of its guns, the terrific ravages of its bursting projectiles, and we have only to bring into play all the boldness and independence of which it is susceptible, to attain the maximum of its power.

This boldness depending upon a support, the infantry can no longer fill the conditions, and this mission becomes exclusively that of the cavalry, rapid enough to keep up.

The intimate union of these two arms opens a limitless field: *Attack of unguarded bivouacs at great distance; occupation of important positions at great distances from the infantry; rapid intervention to fill an interval in the line of battle, or to crush a point which has weakened, &c., &c.*

Suddenly appearing at an unexpected point, it will blast the infantry from a distance too great for reply; and, limbering up, when the enemy have concentrated their artillery to reply, it will vanish, to reappear at some new and distant point. Cavalry support can alone permit this mobility.

At Sedan the Germans supported a galling fire from 200 pieces by a single regiment of hussars, scattered along so as to appear to cover a long line, thus holding back the French and allowing the Prussian infantry time to come up.

This union of the cavalry and artillery will be mutually beneficial; not only will it give the artillery its mobility, but it will give the cavalry an antidote for the infantry fire that now hampers its action.

The rôle of cavalry is, then, enlarged by its union with the artillery, and by the unlimited independence it acquires by the proper employment of its power of fighting on foot.

But to return to the cavalry combat.

CONCLUSION.

We have considered the present French regulations, and consequently the German tactics, of which they are a copy.

We have examined the tactics of the first empire.

We have studied the cavalry action of the last war and the effect of modern inventions. Now for the question: French principles or German for the cavalry combat?

We have copied all the ideas of our conquerors; that was natural; but we have gone too far; we have copied the German system for combat of cavalry against cavalry, when, for more than a century, it has been regularly beaten by the French system.

The regulations of Germany may suit the character of her men and the nature of her horses; perhaps Prussia would make worse use of her

elements by bending them to French principles; for each people has its temperament, its faults, its qualities: and it is beyond dispute that the regulations should take account of this.

Other powers have adopted a cunning formation, and seek success by means of feints and evolution, as we believe, too complicated.

Let us beware of adopting these evolutions of the drill ground, these mathematical figures, these calculations of seconds, distances and directions.

In Germany they say our generals of the first empire were but sabreurs, while those of FREDERIC were tacticians, experts playing with difficulties. Well, let each return to its traditions. We admit that, to-day as formerly, the French cavalry has worse horses and worse horsemen than any other; but that matters little, since, in the last war as under the Empire, our dragoons have beaten them by employing, we repeat it, the principles of the French school and not of the German.

Besides, experiment proves that foreign methods do not apply to the French character. For five years the French have been assiduously drilling in the German school. The result, when we experiment, is failure. For the front attack we deploy too soon; for the flank attack we arrive too late. In the division each line attacks separately, and, instead of one body in the hand of its chief, we have an attack of three isolated brigades.

Down, then, with the Prussian regulations that are stifling our capabilities. For seventeen years we have been painfully plodding along in the furrow traced by our rival. Enough of this decadence; rise and resume direction in the true road of progress.

And, when war breaks out once more, let the French cavalry take the field in full confidence, for the whole history of its cavalry combats is nothing but victory.

Thus is justified the proud device of this work.

THE FRENCH CAVALRY, HANDLED ON FRENCH PRINCIPLES, IS UNRIVALLED IN COMBAT.

CAVALRY RECRUITMENT.

By J. K. MIZNER.

Lieutenant-Colonel, 8th Cavalry.

THE efficiency, usefulness and well being of our cavalry service depends so largely upon the material of which it is composed, that the importance of securing a good class of men cannot be too strongly urged, and entitles the subject of its recruitment to serious consideration. It is a mistake to suppose that the men heretofore enlisted in the cavalry have, as a class, been as good as could be expected to join the service, for the large percentage of desertions proves the contrary.

The subject of enlistments now under discussion, will probably be better understood by considering it in connection with army desertions, for the reason that to the faults in recruiting may properly be ascribed the large number of desertions which continue to occur. In support of this assertion, it may here be stated that the records at the cavalry depot at Jefferson Barracks, show that out of 2,661 recruits received at that depot during the period of about two years, no less than 348 of them deserted before they could be sufficiently instructed for assignment to regiments.

Although no recruits were retained at this depot longer than four months, though well quartered, liberally fed, kindly treated and performing only light duty for purposes of instruction, yet many of them deserted before they had been at the depot more than a month or six weeks.

All these cases of desertion were investigated by boards of officers, who made separate written reports in each case. These reports show principally three things; that no cause could be discovered, that the man was a former deserter and feared recognition, or that he had committed some crime and was in dread of arrest and punishment.

From the fact that these men deserted before they had any sufficient opportunity to obtain any adequate knowledge of the service, and before they could have formed any decided like or dislike for military life, it is evident that they had no honest or fixed purpose in enlisting, but came into the army to secure temporary relief and shelter, or transportation to some new field of adventure.

They were doubtless men of roving, reckless and discontented dispositions, and of that worthless class who fail to find any steady or regular employment, and should never have been enlisted. They probably sought the rendezvous for the same reason that takes men to a pawn broker, and it is quite probable that by a reasonable and proper effort on the part of the recruiting officers, the real characters of these men might have been discovered, and the government have been saved the expense attending their enlistment.

Under the provisions of War Department orders, published in November, 1882, boards of survey have, for more than five years, been investigating the circumstances leading to desertion in the army, with a view of ascertaining the true causes which lead men to abandon the service; and the result of all this inquiry fully justifies the conclusion that the desertions from the army cannot properly be charged to any fault of discipline, mode of life, or treatment of soldiers in the military service; but it is to be mainly attributed to want of character, or inherent viciousness in the deserters themselves.

The immediate transfer of recruits from rendezvous to their regiments, and the more frequent payment of troops have both been suggested and recommended as proper remedies for the evil of desertion. None of these measures will reach the source of the evil, for the reason that it resides with the recruit, and so long as bad men are accepted by recruiting officers desertions will continue to occur, as is well known to officers of experience or reasonable observation.

Besides the expense, loss of time and injury to the service occasioned by so many desertions, the army is brought into disrepute, and the difficulty of securing desirable recruits is proportionately increased.

Cavalry is an expensive branch of our military establishment, and the very important nature and valuable character of the service it is required to perform makes it specially important, and in fact necessary to efficiency, that the best of material should be secured. For the proper discharge of the varied duties of good cavalry, great intelligence, keen perception, quick decision and individuality are most important, and the exercise of these faculties gives the chief value to cavalry. Every effort should be made in recruiting to secure a class of men combining the qualities above named, with physical strength, vigorous health, strong powers of endurance, sanguine temperament, and as far as possible every manly trait that can give grace and vigor to early manhood.

The enlistment of recruits for the cavalry service should be entrusted to officers of experience, and, while just claims for recruiting details in regular turn should be recognized, special fitness must have greater weight in determining which officers can be safely assigned to a duty of such vital importance to the best interests of the service.

To secure good recruits, recruiting officers must be good judges of men, ready and quick in discriminating as to true character and moral tendencies, and who are not easily deceived by plausible and fictitious histories of personal antecedents. Men frequently apply for enlistment who possess the physical requisites with attractive personal appearance, but who are utterly devoid of character, and seek admission into the army only to escape the penalties of some unpunished or undiscovered crime.

Much labor and painstaking care will be required by recruiting parties. They should be composed of the most soldierly of men, as it is fair to assume that the character of the recruits secured will, as a rule, correspond with the class and style of men constituting the recruiting party. The mere flying of a miniature flag in some obscure locality, and the displaying of a few posters, will not be sufficient to secure desirable recruits. The recruiting party must be up and doing. A portion of the detail should frequently appear upon the public thoroughfares beyond the limits of the rendezvous, that the army may be brought to the favorable notice of the people, and that the soldierly bearing, neat personal appearance, evident contentment and cheerful disposition of these representatives, being observed, other good men may be induced to join the service.

The smaller towns and farming regions may occasionally be visited to advantage, as in such places young men generally have some knowledge of horses, are well raised and acquire regular and industrious habits.

It should be borne in mind, in this connection, that the present strength of our cavalry arm of the service is only about 8,000 men; that the ranks of our regiments are already well filled with good material, as the array of service chevrons indicates; that, as the percentage of good material increases, the number of recruits required each year will decrease, and that, at present, not more than 100 recruits per month are needed.

It is undoubtedly possible to enlist 100 good men per month, and it is manifestly proper for the best interests of the service and the country that a higher standard should be established and greater pains taken to secure first-class men. Whenever the men enlisted are taken from the more intelligent and higher grades of society, the service will become more generally known among the better classes, and, as a natural result, an increased proportion of enlistments will be made from the more desirable classes.

The present medical examination of recruits prior to enlistment is very rigid, and generally entirely satisfactory as far as physical soundness is concerned, but does not always settle the question of mental vigor, which is quite as essential to the usefulness and future efficiency of the soldier. The intelligence, moral tone, former occupation, and character of the recruit as to stability becomes a matter for the investigation of the recruiting officer, who should also be satisfied that the applicant for

enlistment has an earnest desire or decided preference for military life above other employments, and has from choice an honest purpose in enlisting.

To accept a recruit who is not likely to develop into a good soldier, or one who is certain to become discontented and unhappy, and consequently of no value, is at once a great injustice to the man and to the government.

With nearly 8,000,000 men subject to military service, it is entirely possible to secure hundreds of young Americans in perfect physical health, full of spirit, activity and enterprise, having a natural fondness for horses and a love of adventure, and general personal characteristics which would ensure an increasing fondness for frontier service, and steps ought to be taken to secure this class of men.

With all the care that can be taken, mistakes will sometimes occur, and it would be far better if recruits were continued in service on probation for the first three or four months, and that the government should reserve the right of discharge at the end of the period of probation for sufficient cause, such as evident want of character, viciousness, or for hidden or concealed physical defects, upon the recommendation of a competent board of officers at the cavalry depot, to consist of the depot commander, depot surgeon, and three senior officers next in rank to the depot commander.

No injustice would result to the men, and the government would be in a measure protected from fraud. No man who is not likely to make a good and acceptable soldier, should be retained in service, and there is every reason why such undesirable men should be discharged before being sent to regiments, instead of being retained to become a burden to the service and a needless expense to the government.

DISCUSSION.

BRIG.-GEN. W. MERRITT, U. S. A.—There is no minor subject of more importance to the cavalry of the United States, than the one which is treated of in the paper we have heard read (Col. MIZNER'S on Enlistments for the Cavalry) and which has been discussed by members of the Association.

I was particularly impressed with the information imparted to the the Association by Lieut. TOMPKINS. He tells us, and he gets it at first hand, from good men of his troop who have remained in the service, that some of the best material which enlists is driven out of the service by the want of proper treatment at the recruiting depots.

This information is confirmed by the remarks of Col. SUMNER, and supplemented by what has been said by Lieut. SWIFT as to the robbery of recruits at some recruiting rendezvous. These matters all deserve to be looked into by the proper authorities and should be changed.

There is no question but that the yearly number of reported desertions is greatly swelled each year by the repeaters or professional deserters. How to get rid of this abuse is a vital question.

Congress has recoiled with horror, simulated or otherwise, from the reasonable proposition that deserters should be tatooed with some mark by which they could be recognized and thus prevented from re-enlisting. So there are no grounds for hope that this plan will be adopted. Besides, if it were, it would only mitigate and not remove the abuse complained of, for those only could be marked who were apprehended and convicted of desertion. Statistics show that these are only a small part of those who desert, and not always the worst.

A method to prevent unworthy men, who have been before in the service from enlisting and one which should commend itself to army officers generally is as follows: Let every man who enlists from this time forward be indelibly marked, in some place selected by experts, with a small star or other sign. Let this mark be recognized as an honorable one, signifying the honorable entry into the United States army of the person who wears it. Let the badge be given with the consent of the person who enters the service as any other condition of his enlistment—such as the oath to serve and to obey the articles of war and the officers over him. If necessary to popularize this, officers on promotion or enlisted men on re-enlistment should receive the same mark of distinction.

It is thought that this regulation could be introduced into the recruiting regulations without the intervention of Congress; but if this could not be done there is no question that as it is purely voluntary, Congress could scarcely object to it. As there is no officer or soldier that is not proud of an honorable connection with the army, there are none who should not be glad of a mark which will identify them with it, even after they have left it.

Can anyone doubt the good effect of this rule in preventing the enlistment of any man who has ever been in the service who could not furnish proof of an honorable discharge? It need scarcely be added that evidence of the removal of the mark should operate as a bar to enlistment.

In this connection it has been suggested that the star placed on men and officers should indicate the points at which pressure should be applied to prevent bleeding to death in case of wound in battle or from accident. Whether this is feasible, the members of the medical corps who are members of the Association will be able to say. If it would answer the double purpose it would be well; but I am firm in the conviction that the indelible star should be adopted as an honorable mark of membership of the army, with or without this additional good which might result from its use.

LIEUT.-COL. WOODHULL, Medical Department.—I have had no service at the mounted depot and none with cavalry recruits as such, but the conditions of the general recruiting service, with which I am familiar, are much the same as those for the cavalry. Repeating in substance what I have said elsewhere, I believe that to require testimonials of character while the rendezvous are established as they now are, in certain parts of large cities, will bring recruiting there to an abrupt end. Very few such recruits enlist from any real knowledge of, or love for the military service. Many enter it from the pressure of destitution, for a livelihood, for subsistence and when their immediate wants are supplied, if they have not been favorably impressed, are very apt to desert, being encouraged therein by a lax public sentiment in regard to that crime and perhaps not regarding the solemnity of the oath. Such men have no fixed residence, certainly none near at hand, and for the most of them a verification of their antecedents is impossible. By changing the location of the rendezvous in the cities, a better class of men, although fewer in number, could probably be secured.

Colonel MIZNER'S suggestion of recruiting parties visiting the country, is in the direct line of improvement and has been advised by others; and a few months ago the Adjutant General informed me that experiments would be made, then the character of the men could be known, and through this knowledge of their families there might be better control.

The suggestion of a probationary period, or a conditional enlistment is one that I have long thought would be most desirable during peace. Then the service could be cleared of undesirable characters, who nevertheless do not deserve dishonorable discharge, nor indeed, punishment by court martial, as well as those who prove vicious. This would require a change of law, but it is a matter well deserving the careful consideration and earnest action of officers interested in the welfare of the service.

One of the great drawbacks to the efficiency of the recruiting service is the see-saw condition frequently imposed upon it. At one time enlistments are confined to men discharged with excellent characters, at another great exertions are urged to fill numerous vacancies, and again for considerable periods recruiting is almost or entirely suspended for lack of funds. It should be comparatively easy for the central authority to arrange for a steady flow of enlistments throughout the year, reference being had to the well established variations that the seasons cause.

In time of peace it is almost impossible to find young men with intelligent martial aspirations, who are otherwise acceptable. These qualities must be developed after enlistment. We cannot expect merely to engraft the technique of the service upon special qualities already found. To develop them, it is an old story to say that the men must be carefully nurtured as soldiers, both at depot and in the ranks. But this is not meant to imply that there is not one class better than another from which selections should be made.

The forced sale of clothing at rendezvous, as mentioned in discussion, is a grievance, but it is not in itself likely to cause desertion. A man who seriously intends to become a soldier is not apt to be deterred by the loss of civilian clothing that he would have no opportunity to wear for at least five years. But he should be allowed opportunity to get its full market value, which at the best would be very little for second-hand garments. A better plan would be to establish the conditional enlistment, and to allow each recruit to wear his civilian clothing to the depot, where it should be safely retained by the government until his status is determined, when it may be returned to him or be offered for sale, as may be proper.

I would accept with many grains of allowance the allegation made in the discussion of an excess of fatigue work at depot. As previously remarked, I have no personal knowledge of the operation of the cavalry depot, but, judging from observation elsewhere, I doubt whether more labor is done by recruits, some temporary emergency excepted, than the clear police necessities require. But many men, impressed with the idea that they are to have no occupation but that of riding a horse, look upon all shovels and barrows as personal grievances.

The practical deficiency of the bread rations of recruits (I still speak only of the infantry, but presume it is the same for the cavalry,) is an evil. Bread is always an acceptable food, either to replace the coarser parts of the ration until the unaccustomed stomachs can be brought to assimilate them, or to add to their nourishment in the men who join underfed. But repeated attempts to have it increased beyond eighteen ounces have failed.

It is, moreover, a matter of notoriety that the depot at Jefferson barracks, although lately improved, has been a distributing centre from which typhoid fever has marked, year after year, the course of men drafted from it, and that the local mortality has been excessive, with a corresponding depression of spirits. When the law requiring the mounted recruits to be assembled at Fort Riley takes effect, these men, then at a healthful post, with the example of the trained troops of the cavalry and artillery school under their daily observation, should be more easily moulded into efficient soldiers, and be more contented in their probationary period, from personal knowledge of the standard they will be expected to attain.

THE INDIVIDUAL SOLDIER.

BY MAJ. E. V. SUMNER,
5TH CAVALRY, BREVET LIEUTENANT-COLONEL U. S. A.

I PRESUME it is the intention of this Society to discuss all points and subjects pertaining to the cavalry service, from the shoe and shoeing of the horse to the crown of the rider's head, each member having the privilege of selecting his own subject.

For the interest of the Society generally, members furnishing papers to be read and considered at home or published abroad, should write on those subjects which have in their service interested them most, or upon which they have some special information.

From books and papers, if we choose to apply ourselves, we may learn of the operations of the past, and articles written on those subjects are interesting, because they carry with them to the finish true accounts of the accomplishments of those great men in our profession whose examples we wish to follow. In studying those examples it becomes us also to take heed of the present, in which we are interested, at least, to the extent of making proper preparation for the future.

In the present we have the daily actions of men immediately surrounding us, and we are called upon to determine what our fellow soldier is by what he says or does. We are sometimes led to doubt the loyalty of our most intimate friends and are distrustful of all. This should not be the case with soldiers, for in all our undertakings we are so entirely dependent upon each other that, to insure success, we should know and trust. WILKISON, in his "Life of a Private Soldier," says: "No matter how brave a veteran soldier may be, he relies on the men on either side of him to stand there until they fall. He relies on them to accompany him in the advances and to be by his side when slowly falling back before a superior force. It is essential that a soldier hears the voices of his comrades when he is charging. He must know that his comrades are as staunch fighters as he."

The past is "as a tale that is told," and its burdens now rest upon the men of our time. A proportionate share of responsibility is thrown upon

every officer and enlisted man in the service to-day; but the portion allotted each of us is so slight that we are apt to think little of it, and, entertaining only a vague idea of our individual obligations, we scarcely realize their importance until we are aroused by some extraordinary occurrence. It is then that those who are unprepared prove to be failures and better men come to the front.

It is hard to make a young officer, who is living an easy life, following beaten paths, believe in responsibility until it actually comes upon him. It is difficult to impress upon the young enlisted man the fact that some of the characteristics of a good soldier must come from beneath his own blouse and must be contained in his own actions.

There are few men whose capabilities extend in all directions, and those who have had a certain amount of experience in life are apt to doubt any man's doing all he advises others to do. In other words, it is quite an easy matter to indicate what a soldier ought to be, but quite another to be one. We will, therefore, leave for abler pens the subject of what the soldier should be, and will look at him as he is, as we find him and see him every day. There can be no reason why the personnel of the cavalry should not be discussed with quite as much interest to the service as discussions held upon arms, ammunition and other material. I approach the subject, however, with the knowledge that many officers think there can be no improvement made in this respect; that their men are all good men, and not to be improved upon; hence they are disposed to let well enough alone. On this principle flint locks and paper cartridges were good enough. Why change to breech-loaders and metallic shells? While it is true that a majority of our enlisted men are of the metallic sort and have the proper ring about them, still some are of the paper kind, good when not drunk; good if everything is all right, but not to be depended upon in bad weather.

It is in support of the reliable men we now have in the service that reform is required; that those men who are not worthy to wear the uniform, and who lower the standard of the enlisted soldier in the eyes of the community, should be rooted out and kept out. No man should be accepted as a recruit who can not bring credentials or show good character by testimony of reliable persons. This rule once adopted and known throughout the country, a better class of men would undoubtedly present themselves for enlistment. Men who now pass the rendezvous daily and think only of returning provided they can do no better, would not hesitate to enter and enlist if they knew good character to be a necessary qualification, and felt that association from that cause would be an object. Few good men enter the service, I imagine, without giving the matter some thoughtful consideration; if, then, the character of the occupation

can be raised to a point where, all thought of degradation is out of the question, it would doubtless have the double effect of inducement to good as well as hindrance to bad men.

But with all due care and taking every precaution, we are bound to get bad characters occasionally; men who develop evil tendencies after enlistment. Such men should be discharged at once, instead of being kept in service and ordered to be disciplined. I do not believe that any amount of army discipline will correct a morally bad man; nor do I look upon the army as a training school for morals, the discipline of men for our purposes having altogether a different bearing. We enforce discipline in order that men shall be brought to render effectual service in time of need. Each soldier, therefore, should be treated as an individual in whom the government has taken a special interest and intends to improve and develop for its own benefit.

BANCROFT says: "The object of all earthly experience is to develop the value of the individual man; and the object of society, of institutions and of government is to protect the rights and to favor the development of each man of the race." If this is true in regard to society and the institutions of men in civil life, why should not the selection and improvement of the individual soldier add strength to the mass?

The training, government, subsistence and most effective use of men at arms has been the study of the greatest soldiers of all ages.

Those men who guide and rule, the rulers knowing the necessity of having force at hand, make the proper government of that force a matter of first consideration and necessarily so, because to be useful to them at all it must be reliable and effective. To be reliable is to be subordinate; to maintain this necessary subordination, discipline is resorted to, and to attain that we have to come down from the consideration of battles and charges in mass to the less interesting subject of the individual soldier.

If there is ever a time in the life of a soldier when he needs care and kindness as an individual it is on his first entering the service. I presume almost every officer has experienced the feeling of having wasted sympathy on undeserving men. This is one of the experiences of life among men. The unfortunate part of it is that it falls so heavily sometimes upon men who really are deserving. It too frequently happens that officers will not take the pains to discriminate in their treatment of enlisted men, between an intentional or an unintentional mistake. Sufficient allowance is not made for the ignorance of men, nor is sufficient patience exercised in the way of overcoming this ignorance.

Every recruit who joins the army is more or less unjustly treated, and each has to receive many hard knocks before he reaches a point where he can look for kindness.

The character of the man goes far toward establishing his status and the man who does not possess the necessary firmness to await the time when he can declare himself, deserts. This may account for the large number of desertions from our army in the first year of enlistment, and as the greater number of desertions take place within that time, the cause may easily be discovered. The men are new to the service and unfamiliar with restraint. They are mixed in with all kind of characters good, bad and indifferent, at the rendezvous, and every discomfort attends the journey from the rendezvous to the depot. While at the depot there is still more crowding and sometimes not even a bed. All these trials have to be endured for three months or more, and at the end, men who enlisted for certain regiments in the south are assigned to regiments in the north and vice versa.

Thus it is that every step on the part of the government has been contrary to that which was expected by the recruit and in utter despair of any change for the better the man deserts.

There are quarters at our cavalry depot at Jefferson Barracks for probably 400 men; that is to give necessary room and comfort for all. They frequently have over 600 there. The men have no place to go, no amusement or recreation, and a large sick report prevails, for it is one of the most unhealthy places in the United States. Those who become discontented and homesick have plenty of time and cause to regret the step they have taken and to mope over the situation. The place has a gloomy appearance; there is nothing bright or cheerful about it, and the men resemble convicts rather than soldiers. If an experience of this nature lasting three months, will not take the spirit out of a young man who entered the service with expectations of a bright and happy life, as he understood that of a soldier to be, I do not know what will do so. A depot may be a necessity but it would be far better for the new men and for the service, and would decrease desertion one-half if recruits could be enlisted for regiments they select and be sent to their stations, their future homes, with as little delay as possible.

It is unreasonable to suppose that officers selected from regiments and sent to depots are going to take very much interest in recruits for the general service, and therefore, the sooner a recruit gets out of their hands and under the protection of his proper officers the better.

The company is the true and only home of the soldier. In the company the new man ceases to be a recruit and learns to be a soldier in the shortest possible time. There he has the care and protection of his own officers; the affiliation of comrades wholly in sympathy with his own views; every comfort in garrison that a soldier should have — his own bed and bedding, his private box, his uniform and equipments complete. Whatever he has is under the protection of all and what he lacks is made

up to him by comrades, who are closer than brothers. Here there is no deception; the captain is intimately acquainted with every man, and each man has his true value.

The better a true man is known the more advantageous it is to the man and the more quickly comes his preferment; the sooner a rascal is discovered the better it is for the honest men. The finer points of the moral law are not particularly observed by soldiers, but the lines are drawn so exceedingly close on some offenses that the offender has soon to choose between reformation or desertion. It is seldom that a man of any standing in his company deserts. When an occurrence of this kind does take place his comrades can always give a reason, and it will be found to be not "incident to the service."

The present management of recruits seem to be in contradiction to the requirements of men, making so radical a change in life, from the freedom of a citizen to the restraints of a soldier; I mean the better class of men, the kind of men we want.

It is not to be supposed that a sensible man entering the service as a private soldier will have extravagant expectations, but it would be better for the man and the service if even ordinary expectations were fulfilled, and still better if good and fair treatment exceeded expectations.

The Adjutant General of the army reports 6,168 accepted recruits last year: 3,788 native born, 2,380 foreign; 5,587 white, 581 colored; 15,535 applicants for enlistment—72 per cent. of the whole number were rejected by recruiting officers on account of physical and mental disqualifications, which shows that notwithstanding the pressing need for recruits, the officers charged with this important duty exercise due care to prevent the enlistment into the army of men not fitted for the duties of a soldier.

It appears further in this report that during the year 2,240 men deserted from the whole army, and of that number 1,105 were men assigned to regiments from depot. Due care having been exercised by officers in making these enlistments, there must be some good cause for the desertion of so large a number within the first year, and inasmuch as the desertion from depots is more than double that from the whole army, persistence in that system, unless some radical changes are made, may be fairly questioned. The lengthened detention of recruits at Jefferson Barracks, an unhealthy post, and so near the outskirts of a large city, where every temptation is put in the way of young men, is the ruin of many good men, and doubtless, the cause of the desertion of numbers who would have been satisfied and contented in their companies.

In the cavalry service alone 2,151 men were received at Jefferson Barracks depot from January 1st to December 31st, 1887. During that

year 1,739 men were sent to regiments, 137 were discharged at depot, 297 deserted, and 19 died.

Of 475 deserters from all the cavalry during the year, 297 men deserted from depot.

In support of the statement of the depot being unhealthy, I submit a comparison between the death rate at that station and the rate at others.

The death rates for the last year for the whole army was, 8.8 per 1,000. At Davids Island, 7.9; Columbus Barracks, 2.7; Jefferson Barracks, 21.25.

I also submit an article taken from a late number of the *Army and Navy Journal*, touching the matter of desertion from depot:

"In a descriptive list of 'deserters,' received this week from the headquarters of the Recruiting Service, U. S. Army, we find recorded the names of 204 deserters. Of this number 161, or more than two-thirds, were recruits who never got further than the rendezvous or depots; eighteen were from the Engineer Battalion, and the remaining twenty-five from regiments of the line. That this large number of recruits should desert so soon after enlistment is a peculiar phase, and one well worth looking into. Perhaps one cause may be the monotony and isolation of the recruiting depot, which perhaps does not come up to the recruit's ideal of a soldier's life, nor give him the best idea of what his military career is to be. Perhaps if recruits on enlistment were drafted at once to regiments and there broken in, in the old-fashioned way, the result might be different."

The recruits having passed their trials and troubles at depot, we now follow them to their regiments.

They are sent from depot in small detachments, and on arriving at regimental headquarters are assigned and sent to troops, the men being allowed to select their troops when it can be done without injury to the service. As affairs are now conducted, the future for these men, if they behave themselves, has in it a life of comparative ease and comfort, our soldiers are never overworked, on the other hand idleness is the bane of our army. There is drill if the weather is not too boisterous, or if the mud is not too deep, when in other callings they are working for themselves, are out and about, attending to their duties, rain or shine, but if any commanding officer should undertake in these days to carry out the precept of old FREDERICK, he would be pronounced a crank at once, and would be condemned in numerous unofficial communications to headquarters on his official acts.

Great improvement has been made in late years towards making the enlisted man more comfortable in his quarters. It is right and proper that men should have spring mattresses, feather pillows and every comfort and convenience the government can afford. Good food, clean well venti-

lated quarters, clothing to suit the climate, reading rooms, bath rooms and certain facilities for amusement, but when this has all been furnished the soldiers should be required to make a proper return, and that is a full day's work for a day's pay. The idleness of our soldiers in barracks is the cause of many disagreeable criticisms and it frequently reaches a point where the soldiers themselves complain of the monotony of their lives, and no doubt not a few desert on that account. We pay so much regard to the matter of having everything out doors just right for comfort, that we drag along from November to April or May in a state of hibernation, waking up in the spring to find that last year's work has to be done over, and that the enforced idleness of many months render it a labor, all of which might have been saved by a continuance of instruction indoors, when it could not be done outside, but the day should be an exceptionally severe one when able-bodied men cannot stand a certain amount of exposure.

There is so much time and so many ways in which men can be improved that there is really no excuse for having so many ignorant men in the ranks of our army; some of whom are even allowed to go through a whole enlistment without being able to sign their names to the muster rolls.

When we come to consider the expense of maintaining a troop of cavalry for six months, and find that the organization is less efficient on the first day of May than in the November preceding, it looks serious, and when that is multiplied by 120, the cavalry arm, when not efficient, may well be called an expensive luxury. Some troops are in better condition and are far superior to others, but we have yet to see any troop where every man in the ranks is able to perform all the duties of a cavalry soldier, and until all men are so instructed there is something left for the officer to do, and I may here add that those men whom we deem well instructed in every particular have generally picked up their information or have a natural talent for observation, and have not become the thorough soldiers they are through instruction.

To indicate what is expected of the individual cavalryman of the future, I will present the remarks of Col. HOME on the subject:

"The position of cavalry should be on the flanks; that is to say, there should be no mass of cavalry on the roads following or leading the army, but the whole country should be filled with horsmen working on a broad front, pushing on at all times, if checked simply halting, while those on the right and left, turn whatever stops the advance. Thus the cavalry of an army resembles more than anything else the feelers of some insects, pushed out in front and conveying impressions to the animal, which guide its movements. To accomplish this duty thoroughly and completely, the cavalry soldier must be trained as an individual, not merely as a unit of a large mass. His individual knowledge and ability must be continually improved and strengthened, while at the same time his power of acting as a fraction in large masses should be kept steadily in view. Thus, as previously said, the cavalry soldier requires to be all he has ever been, together with a great deal more he has hitherto not been."

This theory is deduced from the experience of service in late wars, and it will be seen that the proper instruction of the individual soldier is considered an absolute necessity. To any thoughtful man who is now or may become a troop commander, and who may be called upon at any time to put this theory into practice, or may have the responsibility thrown upon him of gaining important information through the individual troopers under his command, this subject must be of sufficient importance to cause a desire on his part to be prepared. Therefore no day should be allowed to slip by without some advance toward the end desired. It must be admitted that we have a great deal to do to bring the individual soldier up to the standard where he can be thoroughly relied upon in every particular of his duty, and that merely taking care of the horses during the winter months and drilling only in summer will not accomplish the work.

It is needless to say anything about the responsibility for the situation of to-day. In the past our cavalry proved equal to the occasions; that is to say, it was as good as it had to contend with; but improvement in arms and changes in the management and disposition of soldiers in battle calls now for a higher standard, and it is to be seen whether those in authority will recognize the fact. There is no failure on the part of the government in furnishing every requisite for efficiency. We have some splendid men in the ranks—men capable of learning or doing anything. The horses, generally speaking, are good, and the arms and equipments excellent. Being well supplied with the best material, we certainly ought to be making some visible improvement; but is our cavalry really any better to-day than it was this time last year? We seem to be drifting along, holding our own, to be sure, but making no advance. The time will come when an inspection of cavalry troops will be incomplete when it does not reach the individual soldier. To-day the inspector is satisfied and will give a good report on seeing troops and battalions move in line or column at the walk, trot or gallop, the movements, if tolerably well executed, concealing from his view the actions of individuals, who perhaps have not been in the saddle since the last inspection and who are as ignorant as can be of all their duties. Under these circumstances post and troop commanders, the men really responsible, get a credit to which they are not entitled, and department, division and army headquarters receive reports which, as far as the efficiency of the individual cavalryman, as required to-day, is concerned, undoubtedly lead to false conclusions.

I have intimated that the cavalry of an army have made no advance within the past few years. (I except the matter of rifle firing.) Nor do we see or hear of any steps being taken towards improvement beyond the usual summer drills, which are the same year after year The old strain is still kept on the cavalryman, and he is expected to do everything about the post in the way of guard, fatigue, etc., that an infantryman does. He receives no more pay, although subjected to considerable expense in the purchase of extra clothing, cleaning stuff, etc. The result of this is that some of our best men, after serving one enlistment in the cavalry, re-enlist in the infantry. It would be a great point gained if we could hold our old men, as a man in the second enlistment is worth much more than a recruit. I do not say that the cavalryman has too much to do; he is really not occupied half the time in winter; but his employment should be of a different nature—should be confined to his arm of the service, and some distinction should be made between the mounted and foot soldier, if for no other reason than to prevent our losing so many good men, the transfer of an experienced cavalryman to a foot regiment being a greater loss to the government than the pittance it would require to retain him as an expert.

In the matter of drills, exercises and instruction in our army, the management is generally left to the discretion of post commanders. We are loth to express it, but we feel that in some instances a corps prejudice exists which prevents progress. A small cavalry command at the tail end of an infantry garrison will have very little chance for improvement other than that which has to be done, and the cavalry officer who seeks to perfect his men and asks for time or relief from other duties, for that purpose, is silenced if not ridculed. A cavalry officer in command of mixed troops feels a delicacy in showing a preference for his own arm and so it happens, that in either case, the cavalry is not allowed the opportunity it should have. Colonel HOME says: "The tendency is for everyone to think his own branch the most important," that "such feelings are very natural and in the lower grades often do much good, but as men rise in the service it is desirable that they should know something of the duties of other branches and the difficulties others have to contend with. Cavalry officers falling into command of mixed forces will not then expect their infantry to gallop, infantry officers will not seek to bind the cavalry to the pace of their infantry."

This calls for a liberality of feeling which, on the part of post commanders, in our service, is not often exhibited, and when we consider that they are the officers who have the full control of the enlisted men, and have almost unlimited authority in all matters of drill and discipline, the lack of it is disastrous. There are as many opinions in regard to the proper way of exercising command as there are men to give commands.

Some captains are best when left to exercise their own judgment in controlling their men, while others in the same command have to be followed up closely. Some, if the responsibility is thrown upon them visit their troops and quarters frequently and have a thorough knowledge of everything pertaining to their commands, while others sign their morning reports in bed at the hands of a servant, perhaps, and seldom see their troops or only see them when compelled to do so; giving as an excuse for such neglect the opinion that men in quarters should not be too often disturbed by the presence of the officer; such an opinion is nothing less than a mere personal convenience to the officer who holds it, and such an officer not only makes a convenience of his troop but also compels the government to expend money in his pay for which it gets a small return It is not the intention in this paper to touch upon the duties or discipline of officers generally, but where any military system admits of such neglect as has been mentioned, it may be seen that some advantage might accrue to the enlisted man as an individual, and to the government as well, if it were different.

This Association claims to have for its object the advancement of the cavalry service generally.

The instruction of the younger officers now going on is one step in the right direction and will doubtless cause all officers to study more than they have been doing, and to inform themselves in order that they may not be left entirely in the rear. But what are the uses of advanced theories if no practical application is made? Wherein is our service to be advanced or benefited if after we read and study the campaigns of other armies in the field, we close the book and permit the irksome details of our own duties to go on without improvement? It is fascinating in the extreme to read of the brilliant charges and manœuvres of large bodies of cavalry in the field, but awfully stupid and annoying to come down to an inspection of Private So and So's underclothing, still it is important that the private have his clothing and it is essential that the captain know he has it, without regard to what was done at Mars-la-Tour or what was not done at St. Privat. In other words if we expect to make any real advancement the officers, whose duty it is to look after the instruction and improvement of the individual soldier, must be at their posts constantly for practical work; otherwise the magnificent theories set forth for our instruction will prove as useless as an idle dream and our superiors, although they may find us well up in the history of the past, may meet with disaster in our not being able to grasp and perform the simple duty required to meet a present emergency. It is useful, as well as ornamental for us to be as well informed as possible, but as subordinate officers, officers directly in command of enlisted men, there can be no doubt where our first duty lies, or what is most important for us to know. Let us then in our search after knowl-

edge, in fields of information more properly belonging to our superiors, not forget to impart some practical lessons to inferiors in whose hands, after all is said and done, lie our success or failure. In peace and in garrison the officer has every advantage, has no anxiety and no fear; the daily routine of his duty goes hand and hand with his comforts and amusements, but imagine the feeling of a captain, who, brought with his troop, suddenly in the presence of an enemy, with a desperate duty to perform, having neglected his duty to his men, now feels a want of confidence in them and they in him. Under like circumstances the officer who has been true to his subordinates now commands their respect and affection as well as full obedience, and has in that sufficient strength to enable him to engage the enemy with every confidence of success. The best and strongest of us require encouragement occasionally, and when it comes from a superior it seems to have double weight. The soldier who never gets a pleasant word or receives the benefit of a kind act from his captain will not be likely to do more than he is compelled to do and will escape that if possible.

Strict justice to all, kindness to those who are trying to do well, firmness with those who try to do wrong, should be the rule. Favoritism in the army is not confined to high places. Hundreds of enlisted men are thrown into confinement for the most trivial offenses, and many are retained at hard labor under guard for months awaiting trial and afterwards found innocent of any offense. On the other hand, not a few favorites escape who should be punished, and the presence in the ranks of many disreputable characters is a standing disgrace to the army at large, as well as a constant annoyance to the respectable men of the organizations to which they belong.

Within a few years any man who could pull a throttle valve was supposed to be an engineer, but the loss of many lives and great destruction of property soon taught railroad authorities that the best and most intelligent men they could employ were the cheapest for the specific duty required. From the experience of the past, as already cited, it is evident that the cavalry service of the future will require the employment of men sufficiently intelligent for their specific duty. The proposition to have selected men for the cavalry will, I know, at first meet with antagonism from other corps; but it should not when it is understood that the duty required is for the safety of all and for the benefit of the whole army. Any infantry officer coming in command of mixed forces, and feeling the anxiety and responsibility of command, would be greatly relieved in mind if fully assured that his outposts were well guarded—that those posts were held by intelligent, reliable men, who would not fail him, and that he and his foot-sore infantry could obtain their well-earned rest in safety. This assumption is submitted for the consideration of infantry officers who

may command cavalry, but who may now be disposed to question the importance and underrate the value of the steps necessary to improve and advance the cavalry. This Association, although distinctively for cavalrymen, as an inducement has thrown its doors wide open, and invites the entrance and affiliation of every officer of the army and navy. While we have no ambition to surpass others, our aim is simply to excel in our own line where excellence may be required to perfect the whole.

There is no intention in this paper to underrate the rank and file of the army. The heart of every true soldier, whether he is officer or private, goes out to his brother in arms, in the ranks or out of them, provided only he be true, so that the individual soldier, when he can respect himself, and, when he performs his duty faithfully, need have no fear of the criticisms of any man.

CAVALRY RAIDS.

By W. L. ELLIOT,

Colonel and Brevet Major-General, U. S. A., Retired.

THE request that I should become a member of the U. S. Cavalry Association, from an officer of the 1st U. S. Cavalry, on the rolls of which I had been borne as a major from November 5, 1861, to August 31, 1886, and lieutenant-colonel from that date to the date of my promotion as colonel 3d Cavalry, April 4, 1878, was accompanied by a request that I should give a paper on my "experience in cavalry raiding in the western army."

More than a quarter of a century has elapsed since I was a participant in the first raid made by any considerable body of cavalry from either the Union or Confederate armies. Its details are almost as fresh in my memory, as if of recent occurrence. The army of the Mississippi, under the command of Maj. Gen. JOHN POPE, was, after its brilliant operations around New Madrid, and Island No. 10, transferred to the vicinity of Corinth, Miss., early in the spring of 1862.

The Army of the Mississippi consisted of three divisions of infantry, one division of cavalry and — batteries of artillery.

The division of cavalry was commanded by Gen. GORDON GRANGER; its second brigade, consisting of the 2d Iowa Cavalry and 2d Michigan Cavalry, I had the honor to command, leaving Lieut.-Col. EDWARD HATCH, 2d Iowa Cavalry in the immediate command of the regiment of which I was the colonel. The 2d Michigan Cavalry, of which Gen. GRANGER had been colonel, a very superior body of men, was without an experienced commander. Captain, now Lieutenant-General, SHERIDAN, was on duty at Gen. HALLECK's headquarters, as acting quartermaster, and it was with much persuasion and reluctance, that the General allowed him to take the appointment of colonel of the regiment.

The brigade covered the left flank of the army of the Mississippi, and of the entire army in front of Corinth, its pickets extending well to the left and making almost daily reconnoissances.

General POPE, after the subject had been suggested by him and discussed, proposed that a raid should be made by a cavalry command. To this Gen. HALLECK consented, although Gen. GRANGER did not favor it. Gen. POPE conferred with me, and I told him I would endeavor to carry out his views to the best of my ability. The orders were issued, and the necessary preparations made. The 2d Iowa Cavalry and the 2d Michigan Cavalry, each numbered from 900 to 1,000 men. It was ordered that only effective horses should be taken, so that from the 2d Iowa about 500, and from the 2d Michigan about 400, officers and men were selected. Five days rations of bread, sugar, coffee and salt were issued; for the meat ration we were to depend upon the country. Forage for one night was also taken. The command was not encumbered with pack animals, ambulances or artillery. Gen. SHERIDAN dined with me, and about dusk of the 28th of May, 1862, the command started on its march.

I had reported to Gen. POPE's headquarters, to take leave of him and also of Gen. GRANGER; the latter bade me good-bye with the remark, "There goes the finest brigade of cavalry in the army. BEAUREGARD will catch you and hang you."

The general impression was, that we were going to reinforce Gen. O. M. MITCHELL, at Huntsville, Ala., or for some service in that direction. Our march was to the eastward a few miles, where we bivouacked for the night. The next day we continued the march to and beyond Iuka, and from there we marched more in a westerly course, making a noon halt at Pepton's Mills. The enemy did not seem to have any scouts watching our movements, and but few able bodied men were encountered in our march. A couple representing themselves as journeying to the residence of a clergyman, for the purpose of being married, were informed that the wedding would have to be postponed for a few days, as the expectant groom would accompany us.

So unexpected was the advent of the command into the enemy's country that a detachment, I think a company of cavalry, rode past the flankers and up to the column before they discovered their mistake, thinking we were Confederate cavalry, and, of course, became our prisoners. In the afternoon our march was continued southerly until dark and then directly for Booneville, on the Baltimore & Ohio railroad. An hour or two before daylight we halted about a mile from the depot, not wishing to reach the latter until light enough to see. Our approach to, and surrounding of, the depot was a perfect surprise. The main body of the command was held in readiness for an emergency, while detachments were sent below and above the town to destroy any culverts, bridges or water tanks found. At the depot was found an engine and train of box cars, with platform car, on which were loaded artillery and

other supplies. The depot building was also filled with stores, all of which were fired and destroyed.

The woods adjacent to the depot contained a large number of sick and convalescents. These, preparatory to the firing of the building and train, were directed to be removed, and part of my command assisted in their removal. After an hour or two's delay and the return of the absent detachments, the command commenced its return march to camp, near Farmington, having met with little opposition, and, not being advised of the evacuation of the works around Corinth by the enemy; otherwise the return march might have been made by a less circuitous route, and the command might have been employed on the flank of the retreating enemy. The command reached its old camp the night of the fourth day after its departure, to find that the enemy had retreated from Corinth, and the next day joined the army in the vicinity of Rienzi, and that afternoon was employed, with the addition of a battery of artillery, in making a reconnoissance toward Blacklands, and within a few hours, being able to report to the commanding general that the enemy was yet in force in our front.

In addition to the destruction of property at Booneville and the alarm created at the headquarters of the Confederate commander, as was afterwards learned, about ten locomotives and two hundred box cars fell into our hands between bridges destroyed south and west of Corinth. I was informed by Gen. McPHERSON, then superintendent of the railroad, that this transportation enabled him to supply the army from Columbus, Ky., until additional transportation was sent from the North, the Tennessee river being too low to admit of the passage of the smallest class of boats.

The loss in my command was comparatively small.

Raids of any kind, in my opinion, are demoralizing to those engaged, and should inflict great damage on the enemy to compensate for the effect on the discipline of a command.

The 2d Iowa Cavalry was composed of comparatively young men and mostly farmers' boys—fine horsemen—and, having the regiment under my own supervision from September 14, 1861, until it was put in the field in front of New Madrid in March, 1862, it was well disciplined, and in drill, at least, equal to any cavalry regiment in the service.

The 2d Michigan Cavalry had also the advantage of being disciplined and drilled by a cavalry officer of experience, and, with the assignment of SHERIDAN as its commander, his influence was soon apparent. Such troops are better for raids than the undisciplined or imperfectly instructed.

My experience in this first raid suggested that the organizations for other raids should have the addition of an ambulance for each regiment,

two pack animals for each company and regimental headquarters, a four-gun battery of horse artillery to each division, a section of same for a brigade. Also that crowbars, sledge-hammers and axes should be taken for the purpose of loosening rails and switches and cutting fuel for burning ties and twisting rails. I hope that this subject may be continued by others who have had the experience of raiding in both the eastern and western armies.

THE RUSSIAN REGULAR CAVALRY.

BY E. A. ELLIS,
FIRST LIEUTENANT 8TH CAVALRY.

ON account of its vast extent, the Asiatic origin of its peoples, and the nomadic character of many of its present inhabitants, Russia is peculiarly adapted to the development and extensive use of cavalry. Although a study of the Russian cavalry is always interesting, the subject, at the present time, has special interest for the American military student. On account of its extent, poor roads, and the natural adaptability of its inhabitants to the horse, the conditions in Russia are similar to those existing in our country at the time of the last war. Therefore we are not surprised to learn, that the lessons of the rebellion have borne fruit in Russia; and that the tendency there at the present time is to give great importance to the raid, and to fashion all the cavalry on the model of the mounted infantry or dragoons, rather than on that of regular cavalry, in the ordinary continental sense of the term. Well informed Russian officers maintain that an army possessing a large number of mounted men capable of being used as infantry has great advantages over that army that does not have them; and that any cavalry without them is unsuited for the requirements of modern warfare. While in no way neglecting the training of their cavalry, *as such*, they go farther, and, using the horse as a means of rapid locomotion only, deliver the trooper at the required place in the shortest time, there to cope with infantry on its own ground, with its own weapons, and in a kind of combat learned from it. After the combat the horse again comes into use to bear the trooper, if victorious, in pursuit; if defeated, to a place of safety.

To carry out these ideas the Russian authorities in 1882 reorganized the cavalry, and by this reorganization all line regiments were made dragoons, and, with the exception of a few guard regiments, all other kinds of cavalry were abolished. To enable them to engage infantry, they were given a similar weapon, the Berdan rifle with a shorter barrel. The cavalry regulations expressly declare that the troopers are to be taught to pride themselves on their ability to fight on foot, and to take the place of

infantry. The cavalry target practice is similar to that of infantry. The fighting on foot movements conform, as nearly as circumstances permit, to the open order formations of the infantry.

The aim of the Russians is to make the cavalry feel its own independence and its ability to take care of itself under any and all circumstances. With this view they are taught to throw up temporary earthworks and to charge with the bayonet. As says an English writer: "It is hoped that without sacrificing the efficiency of cavalry in its primary employment, that of fighting on horseback, it may be possible at the same time to train it so thoroughly for dismounted action as to place at a Russian general's disposal a great mass of horsemen provided with entrenching tools and fit to measure themselves on foot with the enemy's infantry, whilst equal, when mounted, to any encounter with his cavalry." But little value is placed on the revolver; on foot the trooper's weapon is the rifle; on horseback, the saber.

To show that all this fighting on foot and general service as infantry has not caused a deterioration in the *cavalryman*, I will mention one fact only, viz: that, in their drills, sections and squadrons practice in charging against one another, passing through one another's ranks. If they are not good cavalrymen this manœuvre will show it; for the good seat, quick eye, and thorough command of the horse—all requisites of good cavalry—are necessary to a completion without accident of this movement.

The regular cavalry is composed of: First, ten regiments of the guard, comprising:

4 of Cuirassiers,
2 of Dragoons,
2 of Lancers, and
2 of Hussars,

And, second, forty-six regiments of dragoons, forming the cavalry of the line.

The four regiments of cuirassiers of the guard have four squadrons each, all other regiments have six squadrons. Each squadron, in peace or war, is composed of:

1 Squadron Sergeant-Major,
11 Sergeants, (4 senior, 7 junior),
3 Trumpeters, (4 in Cuirassiers),
8 Lance-Corporals,
120 Privates,
143 Horses.

The squadron is divided into four sections of sixteen files front each.

The regimental establishment for a six squadron organization is:

OFFICERS AND CLASSED OFFICIALS.

	War.	Peace.
Regimental Commander	1	1
Field officers	2	2
Squadron Commanders, (Captains)	6	6
Regimental Adjutant	1	1
Paymaster and Quartermaster	1	1
Arms officers	1	1
Regimental Judge Advocate	1	1
Subalterns	23	23
Total officers	36	36
Senior Surgeon	1	1
Junior Surgeon	1	1
Veterinary Surgeon	1	1
Accountant	1	1
Captain	1	1
Total classed officials	5	5

NON-COMMISSIONED OFFICERS AND MEN.

(a.) Combatants—Mounted:		
Squadron Sergeant-Majors	6	6
Sergeants	66	66
Regimental Trumpeter	1	1
Trumpeters	18	18
Lance Corporals	48	48
Privates	720	720
Total mounted combatants	859	859
(a.) Combatants—Dismounted:		
Roughriders		2
Quartermaster-Sergeants, (1 for pay, 1 for quarters, 6 for squadrons)	8	8
Sergeants, (including 1 for transport)	7	7
Privates	46	133
Total dismounted	61	150
Total combatants	920	1,009
(b.) Volunteers		18
(c.) Non-Combatants:		
Regimental Clerk	1	1
Other Clerks	4	9
Various Employes, Hospital and Veterinary Departments	13	21
Sacristan	1	1
Armorer and Assistants	2	3
Farriers, Regimental and Squadron	1	7
Saddlery Department		7
Cutter and Fitter		1
Tailors		6
Total Non-Combatants	22	56
Regimental Transport Drivers	48	6
Grand total non-combatants	70	62
Total N. C. Officers and Men, (including Volunteers)	990	1,071

HORSES.

Officers and Troop	940	893
Transport Horses	85	12
Total	1,025	905

In the guards the regimental commander is a major-general; in the line, a colonel.

Of the 133 dismounted privates there are:

6 Shoeingsmith's pupils,
24 Trumpeter pupils,
18 Permanent Orderlies,
6 Orderly-room Messengers,
24 Officers' Grooms,
7 Cooks,
14 Bakers,
25 Officers' Servants.

When mobilized, sixty of these go to fill up the ranks; the cooks and bakers become transport drivers, and the rest remain as servants in the officers' families.

A cavalry brigade consists of two regiments. A division, the greatest tactical unit, consists of two brigades and two horse-batteries.

STRENGTH OF A CAVALRY DIVISION OF THE LINE.

	Officers.	Officials.	Non-Commissioned Officers and rank. Combatants.	Non-Commissioned Officers and rank. Non-Combatants.	Horses. Combatants.	Horses. Transport.	Guns.	Ammunition Wagons.	Other Carriages. 1 H.	2 H.	4 H.
Divisional staff	4	1	.....	12	.....	13	.....	.....	.....	6	.....
Two brigade staffs	4	.....	.....	2	.....	.....	.....	.....	.....	.....	.....
Three dragoon regiments	108	15	2,577	393	2,820	255	.....	.....	33	87	6
One Don Cossack regi'nt	25	3	889	83	917	86	.....	.....	10	20	2
One-half sotnia of Cossacks	1	.....	64	.....	65	.....	.....	.....	.....	.....	.....
Two horse batteries	10	3	358	61	455	42	12	24	2	8	10
SUPPLY AND TRANSPORT.											
Staff and general divi'on	3	3	.....	65	.....	86	.....	.....	2	21	.....
Supply division	1	1	.....	70	.....	113	.....	.....	.....	48	.....
Total	156	26	3,888	686	4,257	595	12	24	47	190	18

DEPOT CAVALRY.

The measures recently adopted by virtue of the decree of the 23d of August, 1883, have substituted for the depot squadron, which formerly corresponded to a regiment, a depot cadre corresponding to a division and comprising three or four sections; two cadres, that is to say six or eight sections, constitute a brigade.

These cadres are charged, in peace, with the training of remounts for their cavalry regiments; in war, in addition, with the formation of depot squadrons, from which the losses in the field are made good.

Each brigade of cadres has a staff of one major-general, one adjutant, two clerks, one armorer. In peace the cadre consists of ten officers, two classed officials, 249 combatant rank and file and thirty-five non-combatant rank and file; horses, 297.

In mobilization each section receives from each regiment two staff captains, (one already with the cadre), two roughriders, the combatant non-commissioned officers and men left behind by the regiment, two clerks, five dresser-pupils, one saddler, one armorer and one cutter.

They are sent at once to the depot with all their papers, etc. Each section then proceeds, on the arrival of the reserve men and the horses obtained by the conscription, to form two depot squadrons of twenty files to the section, retaining 135 combatant and forty-five non-combatant non-commissioned officers and men to form a third squadron, if required, to hasten the making of uniforms, etc.

Each depot squadron will have five officers, 180 combatants, (men), eleven non combatants, 213 horses.

	Officers.	Non-Com. Officers and Men.		Horses.
		Com.	Non-Com.	
Strength of section in peace	2	83	14	99
Received from regiments on mobilization	2	2-2)	10	.....
Total	4	85	24	99
There are required—				
To form two depot squadrons	10	360	22	416
To form the third squadron	5(?)	135	45	0
Total	15	495	67	416
Required, therefore, from reserve of each regiment	11	410	43	317

ARMS.

Sword.—Is curved, three feet four inches long, and weighs two pounds eleven ounces. The scabbard is of wood covered with leather. The gurad is made in one piece.

Rifle.—The Berdan dragoon rifle is carried by all combatants (except sergeant-majors, trumpeters, and transport-sergeants,) in a case slung over the back, muzzle upwards, with butt behind right hip. It is secured at the shoulder and waist. It fires the same cartridge as the infantry rifle, and differs from it only in length of barrel, being 4 ft. long. Its weight is 7 lbs. 6 oz. It is sighted up to 1,200 paces.

Bayonet.—All men armed with rifles carry the bayonet in a scabbard, fastened to the sword scabbard. With bayonet fixed the carbine is 5½ ft. long.

Revolver.—A Smith and Wesson, is carried in a case on the waist-belt by sergeant-majors, trumpeters and dismounted combatants, on all occasions, by transport-sergeants and all non-combatants in war only.

Lances.—The lance is now used only for parade purposes.

To show how these soldiers use these arms on foot, I will give an extract from the "War correspondence of the *Daily News:*"

"Suddenly is heard the quick, steady tramp of armed men on foot, marching across the bridge. Whence came they? No infantry followed our column of dragoons. But there is the gleam of bayonets! Surely infantry men must have come up somehow. Listen narrowly a second and the ear detects through the duller sound of the footfall the jingle of spurs. The Russian dragoons are dragoons proper in the original signification of the term, and as, when occasion might offer, they would show that they are heavy cavalrymen of the right stamp, now they were to show that they could act as infantrymen as well as the best foot soldier who ever tramped. The outside men of threes in the first squadron had dismounted, giving their horses to the centre men. They had drawn their short rifles from their leather sheaths slung over their backs, and had taken their bayonets from the sheaths fastened to the sword scabbard. Their officers carry rifles like the men, all save the captain; and a fine, upstanding, stalwart set of fellows they look, fit to go anywhere and do anything."

This was written before the conversion of all cavalry into dragoons; but what this particular regiment did then, can now be done by any regiment in the service.

QUALIFICATIONS OF RECRUITS

The minimum height is 5 ft. 4¾ in.; the maximum 5 ft. 10 in. They must be of a build suitable for horsemen; and short legged, bow legged or knock-kneed men are not to be taken.

UNIFORMS.

The uniform, which is serviceable, calls for no special comment, except that many of the cavalry have white leather guantlets for parade

SADDLE.

The saddle is simple in its construction and consists of two wooden bars connected by two iron arches. Its simplicity makes it very economical. It is eminently practical because it can be fitted to any horse by means of a felt pad of varying thickness. Sore withers and backs are extremely rare. It is also very easy to repair.

The seat, which is stretched between the arches, and the flaps, are of leather. The stirrup leathers pass through D rings fastened to the bars. All saddlery is left the natural color of the leather. No cruppers or surcingles are used. Two wallets are strapped on the front part of the saddle, and two saddle-bags to the rear part of the numnah, a felt-lined leather pad which goes between the blanket and the saddle. The bit is hooked to the end of the bridle head so that it can be easily detached.

SADDLE-PACKING FOR FIELD SERVICE.

In front of the saddle are the corn sack with its ends pushed into the wallets, the great coat on top of the sack, and the piece of tent on top of great coat. Every other man carries a canvas water bucket, folded up and placed inside great coat. This seems to be a very poor place for it, if it is to be used on the march.

In the saddle-bags he carries:

On off side.—A forage rope, 1 clothes brush, 1 grease brush, 1 harness brush, 1 shirt, 1 pair drawers, 1 pair ankle boots, 1 towel; and in a pocket, 2 horse shoes, 16 nails, 1 chrry comb.

On near side.—A hay net, a bag with 1½ rations biscuits, 1 cholera belt, 1 pair earlaps, 1 bandage, bag containing 9⅗–12 oz. of groats, bag with 1⅕ oz. salt, bag with tea and sugar. (The last three bags are rolled up in a spare piece of cloth for repair of tunic.) Bag with spare parts for carbine, and cleaning materials, rolled up in a piece of cloth for repair of breeches, 1 towel, 1 piece of soap, housewife and comb, rolled up in a piece of linen for repairs, pair baggage straps, nose bag; and in a pocket, 1 horse brush. His blanket, in a case, is in the rear of the saddle, and is shoved into a copper cooking pot, which fits exactly over one end.

RATIONS.

For a soldier in time of war:

Biscuit, 1 lb. 13 oz., (or flour or bread equivalent.)
Fresh meat, 7¼ oz., or 3⅝ oz. ham.
Groats, 4½ oz.; tea, $\frac{2}{16}$ oz.; sugar, $\frac{2}{16}$ oz.
Salt, ⅛ oz.; spirits, .27 pint.

Pepper ($\frac{3}{80}$ oz.) and vinegar (.18 pint) may be issued by the commander-in-chief, who also orders the issue of spirits and meat, these not being included in the daily ration. The Greek church requires abstinence from meat on fast days, and, as there are 169 of the latter, the soldier gets meat on 196 days—not quite ninety pounds a year!

HORSES.

From the horse census of 1882 it appears that there were 19,674,723 horses in European Russia, of which over 70 per cent. were fit for work. In addition there were in the hands of the Cossacks, in the same limits, 1,252,316 of all ages.

Horses are obtained for the army in time of peace by purchase, and on mobilization by requisitioning.

Remounts for the line cavalry are purchased by officers specially detailed. The purchase price varies from 185 to 207 rubles—that is, from $148 to $165. The above sums cover all expenses of purchase and keep of the horse until he arrives at the unit for which he is destined. No special color is laid down for each regiment, but horses are assigned to squadrons according to color. The horses must be from 14 hands 2 inches to 15 hands 1 inch in height, with a margin of one inch for exceptionally well-shaped animals. They must be from three to six years of age.

After purchase (evidently conditional) the horses are united at the depot cadre corresponding to the regiment, where they are inspected by a board and improper ones rejected. In 1885, out of 9,667 furnished by the remount officers, 1,031 were rejected. The horses remain one year at the depots, and are there broken to service. All remounts join their corps between September 15th and October 15th; that is, about the time of the arrival of the new levies.

REQUISITIONING FOR HORSES ON MOBILIZATION.

The Minister of War determines from the horse census the number of horses a district is to furnish, fixes the price to be paid per horse and appoints certain places where horses are to be bought. The evident desire on the part of the Russian government is to get the horses without friction, ill-will or injustice. To this end, owners parting voluntarily with their horses receive 20 per cent. additional on the price fixed by law, and free two horses, besides, in the class to which the one taken belongs. Owners concealing, or failing to produce, their horses are liable to a fine amounting to double the price of the horse, or, if unable to pay, they are liable to imprisonment.

INSPECTION AND CONDEMNATION OF HORSES.

Horses are examined annually by a board consisting of regimental, brigade and division commanders. The period of service for a horse is ten years, hence 10 per cent. are condemned. All that have served twelve years are first thrown out, then those that are unsound, then the oldest until 10 per cent. have been ejected. The after-history of a condemned horse is the same as in our service.

STABLE MANAGEMENT.

Horses must have from fifty-six to seventy inches of standing room in stables. Stalls must be at least nine feet four inches long, with a gangway in rear two feet four inches wide. Stable orderlies are present in stables at all times. The Russians have three stables a day. The first is at 5 or 6 A. M., depending on the season; the second at noon, after drill,

and the third at 6 P. M. The oats are divided into three equal feeds. One or two pounds of hay are given at each of the first two stables, the rest at evening stables. Horses are shod at least once every six weeks. In winter horses are exercised for an hour in blankets. Once a week through the winter and spring months route marches are made, regardless of the condition of the roads, by bodies varying in size from a section to a regiment. These marches, which are six or ten miles in length, are made at a pace of two-thirds of a mile at a walk and one and one-third miles at a trot, finishing up with two miles at a trot and two-thirds of a mile at a walk.

FORAGE RATION.

Forage is issued every ten or fifteen days. The peace ration for line cavalry is as follows: Oats, 9 lbs. 5½ oz.; hay, 9 lbs. 1 oz.; straw, 3 lbs. 10 oz. One month of grazing is given all cavalry horses per year, and this is in lieu of all rations. If necessary hay may be substituted for oats, at the rate of 4 lbs. 8½ oz., hay for 3 lbs. 1⅓ oz. oats. In time of war the ration is 12 lbs. 15½ oz oats and 13 lbs 9½ oz. hay.

MARCHES.

The rates for marching cavalry is:

At a walk 3¾ miles per hour;
At a trot 7⅞ miles per hour;
At a trot and a walk alternating, 4⅝ miles per hour.

A day's march is from 20 to 26 miles, the time occupied being from 3½ to 8 hours. Under favorable conditions small bodies of cavalry are considered capable of marching 46 miles in a day.

ENTRENCHING TOOLS.

As has been already stated, the cavalry is taught to throw up temporary entrenchments. The government has carefully provided it with good and proper tools for this purpose, and with the simplest and easiest means of carrying them. In the first place, twenty light shovels and twenty axes are carried, in each squadron, on the saddles, in leather cases. (These are fitted with loops and may be carried on the waist-belt.)

The following tools and material are carried in a two-horse wagon in the regimental transport:

(A.) For destruction of railways and telegraphs, per two squadrons:

Various tools (crow bar, wrenches, auger, hammer, cold-chisel, &c., in cases.)
20 pyroxiline cartridges with fuses, primers, &c., in cases.
4 rope beckets for climbing telegraph poles.
70 ft. spun yarn for fixing cartridges.
70 ft. cord for tying telegraph wires.
70 ft. wire for entangling same.
Pack saddle and appurtenances for carrying the above.
Total weight 142¼ lbs. Total for regiment 426¾ lbs.

(B.) Tools for the construction of bridges and ferries:

Various (consisting of chisels, saws, hammers, &c.)
Weight per squadron 24 lbs.; per regiment 144 lbs.

(C.) Entrenching tools:

4 large steel spades.
4 large axes.
Total weight per squadron 32 lbs., 10 ozs.; per regiment 195¾ lbs.

(D.) Reserve of pyroxyline, fuses, &c., for whole regiment, 121 lbs.

Recapitulation of weights per regiment:

(a.)	426.75
(b.)	144.
(c.)	195.75
(d.)	121.
Total,	887.50 lbs.

Transport of a six squadron cavalry regiment. The following stores, &c., are carried in the regimental transport:

I. Squadron baggage, (per squadron):

1. Ammunition, 36 rounds per private.
2. Tinned rations, 144 lbs.
3. Camp equipage. (4 camp kettles, 1 bucket, 1 ladle, butcher's knife, meat fork, meat dish, and various other implements). Weight 122 lbs.
4. Officers' baggage, 2 tents. Weight 72 lbs.
5. Picket line and gear. Weight 277 lbs.
6. Implements for cutting grass. Weight 40 lbs.
7. 4 pairs panniers for use with pack saddles. Weight 36 lbs.
8. 6 pairs of bladders for swimming rivers. Weight 27 lbs.

The above are loaded into a one-horse cart for ammunition, and a two-horse wagon.

II. Regimental baggage.

(a.) Carried in the squadron wagons:

1. Supplies: Biscuit (½ day's) for 193 men.
2. Officers' baggage: 5 officers, 72 lbs.
3. Field forge, appurtenances and fuel, 265 lbs.

The above are carried in one two-horse wagon per squadron.

(b.) Carried in the regimental wagons, &c.:

1. Supplies: 2 day's rations for men of the squadron, 4 days for regimental staff, 4,916 lbs.
2. Camp equipage for men of regimental staff, 113 lbs.
3. Officers' baggage, (433½ for regimental commander, 90 for field officers, 72 for others. Classed officials' average 120 lbs., 1 tent for each field officer, and for every two other offiers of the staff).
4. Field forge, tools and appurtenances, 445 lbs.
5. Grass cutting implements, 40 lbs.

6. Wheelwrights' tools, 30 lbs.
7. Saddlers' tools and supplies, 88 lbs.
8. Armorers' tools and supplies, 66 lbs.
9. Horse shoes and nails, 2,650 lbs.
10. Panniers for pack saddle, 36 lbs.

The above stores are carried in twelve two-horse wagons and one one-horse cart for the regimental commander. –

11. Treasure chest, 288 lbs.
12. Regimental books and records, 378 lbs.
13. Chaplain's stores, 108 lbs.

The above are carried on a two-horse wagon.

14. Medical stores.

Carried in two two-horse wagons.

15. Veterinary stores and instruments.

Carried in a one-horse cart.

16. Tools for entrenching, bridge building, &c., 887½ lbs.

Carried in a two-horse wagon per regiment.

17. Spare stores, spare parts of wagons, lanterns, shoes and nails for spare horses, picket pins and picket ropes for same, are distributed among the regimental wagons.

In other words, the regimental transport has a grand total of forty-two carriages, eighty-five horses and forty-two drivers.

The length of a cavalry division marching in one column, without an advance guard, with its artillery, exclusive of its train, is 7,370 paces. With its train, same formation, about 9,482 paces.

TACTICAL NOTES.

The squadron is drawn up in double rank, with one yard from head to croup, and is divided into four sections. At all times the section is sixteen files front, the rear rank in centre of section being left blank if necessary. The squadron has, therefore, a front of sixty-four files, and, with the guides on the flanks of sections, occupies a front of eighty-six yards. Its depth, including file closers, is fifteen yards.

FORMATION OF A SQUADRON IN LINE.

The sections are counted off by threes. The squadron leader in line is section-front distance in front of the centre of his squadron. The leaders of the right and left sections are one pace in front of the second file from the right or left respectively of their sections, and those of the two centre sections in front of the centre of their sections. Sergeants are placed on the flanks of each section, the remaining ones, in the line of file-closers, one yard in rear of the rear rank. The sergeant-major is the squadron file-closer, and is three yards in rear of the centre of the line of file closers. Supernumerary officers are placed in front of sections, never in the line of file closers.

PRINCIPAL FORMATIONS OF A SQUADRON.

Are line, columns of sections at wheeling distance, and *échelons* for gaining ground to the front and flank by a quarter wheel of sections to that flank. A squadron can move to the front or to a flank in single file, in twos, threes or sixes. The distance between squadrons in a regiment in line is section front. The regiment in line, therefore, has a front of 611 yards.

REGIMENTAL FORMATION.

A regiment generally works in line of squadron columns at deploying distance, but the interval may be reduced to seven yards. The column formations are: Column of squadrons at wheeling distance, quarter columns with seven yards between squadrons, or column of sections at wheeling distance.

GENERAL PRINCIPLES.

Cavalry is never to attack without a reserve. Cavalry must reform rapidly after a charge.

A force that has overthrown the enemy by a successful charge is not permitted to take part in the pursuit till it has reformed.

The charge is always made in line.

In retiring, in no case is the pace to be faster than a trot.

In acting against cavalry the front of the attacking force should be at least equal to the enemy's. In advancing the attacking force trots to within about 600 or 800 yards, then gallops for about 400 or 500 yards and charges when within 200 paces of the enemy.

Against infantry a rapid pace must be maintained throughout, in order to reduce casualties; hence, the gallop is commenced 1000 yards from the enemy. Large bodies of cavalry generally attack in *échelon* of squadrons, the reserve being kept in column. Another formation is double *échelon* of squadrons on the center, the attack being made by the center squadrons, and the flank squadrons in column of sections form a reserve on either flank. An unsuccessful charge against infantry is not to be repeated more than three times, on account of the increasing confidence of infantry and of the encumbered condition of the ground, caused by the fallen men and horses.

Charges on artillery are to be made when it is in motion, or when it is limbering or unlimbering. A battery may be charged in flank with impunity, even when in action, if the charge is made in open order. I imagine that after Russian cavalry has tried this once or twice, the enemy will defend the flanks of batteries with machine guns. Captured guns are to be turned against the enemy, and, for this purpose, fifteen men per squadron are taught gun drill. Extended order is to be used against skirmishers or scattered parties of cavalry or infantry.

The attack formation of a division is in three lines, two regiments forming the first line and one each the other two.

FIGHTING ON FOOT.

Nos. 1 and 3 dismount; No. 2 holds the horses. Bayonets are fixed at once. Every dismounted officer has a trumpeter with him. The only formations are half squadron column, line and open order. One section is kept mounted as a guard for the horses, so that only three-fourths or two-thirds of the squadron dismount; that is, exactly 50 per cent.

Every year an officer and a detachment of men are sent from each cavalry regiment to the camp of instruction of a sapper brigade to be trained as pioneers. The instruction is for two months.

Six pairs of bladders for use in swimming rivers are carried with each squadron. The men become very expert in this exercise. The Cossack regiment of the 4th Cavalry Division swam a stream 130 feet wide, ten feet deep and with a current of eighty-eight feet a minute, in twenty-seven minutes.

The men are trained in heliographing and telegraphy.

All these lessons are taught and practiced in summer camps of instruction, in which, in addition to participating in minor tactical exercises with the other arms, the cavalry practice manœuvres and marches, in which the problems to be solved are as nearly as possible similar to those they will meet with in actual warfare.

COSSACKS.

I do not propose to say anything about the Cossacks as such. One regiment of them is part of every line division. There are also Cossacks of the guard. They are to all intents and purposes regular troops.

Russian policy is to incorporate at once, all inhabitants of recently acquired territory into her system, and any absorption of Asiatic soil is speedily followed by the appearance of a body of irregular horse recruited from the inhabitants of this acquisition. After European resources have been exhausted, Russia has an almost limitless supply of men and horses, in the Nomadic tribes of Asia, ranging from the Caspian to China and from Persia and Afghanistan northward to the Arctic. Although a distance from Russian civilization and short service as soldiers will detract from the value of this irregular horse, still, taken as it is to-day, its usefulness is not to be despised.

Any cavalry Russia may bring into the field in the next European war, be they Cossacks or dragoons, will be to all intent and purposes "regular" and it is to such my remarks apply. The guards are merely a favored branch of mounted men, with better horses, smarter uniforms, increased pay and greater privileges.

Such then is Russia's cavalry. The changes made are radical, and of a nature to make old-fashioned cavalrymen of the continental schools hold up their hands in horror. Other nations persist in disregarding the achievements of the cavalry on both sides during the rebellion. When a European writer other than Russian, is forced by the stern logic of events to give some faint praise to our cavalry, he always couples to it the contemptuous addition, "but they never had to oppose good cavalry." The Russians are wiser and seem to think that the cavalry combats of our war were something more than the collisions of irregular horse. They believe that the methods of fighting then introduced, and shown in every subsequent war to be based on sound principles, are worth adopting and improving. They can give no stronger proof of their faith; for these same methods are the ones on which they depend for success in the war now impending.*

DISCUSSION.

FIRST LIEUT. GEORGE B. DAVIS, 5th Cavalry:—I have listened with great interest to Lieut. ELLIS' very clear and satisfactory account of the Russian cavalry. There are many respects in which our experience is similar to that of Russia. Both are to a great extent new countries; in both those phases of development that are peculiar to new countries, or to newly settled territories, are still in progress, and both have relations with nomadic races, making it necessary for each to employ not a small part of its standing military force in their control and police regulation. Russia, too, unlike other European powers, seems able to maintain a large mounted force on its peace establishment; and is thus enabled to apply, in practice, the rules deduced from our experience in the Civil War, as to the separate, strategic use of the cavalry arm. In the war now believed to be impending in Europe, not the least interesting of its developments, to the military student, will be the results obtained from such an employment of large masses of cavalry.

It is always interesting to watch the formal adoption of an American idea into European practice. It is subjected to so many precise refinements of detail: it is so carefully thought out, and each phase, or contingency, is followed so remorselessly to its logical conclusion, as to result, not infrequently, in missing the point of the whole thing. The case of the equipment of the cavalry division which Lieut. ELLIS has explained so clearly, is an illustration of this. Every possible contingency seems to have been considered in the matter of outfit and equipment. There are tools and appliances *constructive*, and tools and appliances *destructive*; provision seems to be made for the annihilation, and subsequent reconstruction, of every tangible result of man's endeavors in the way of material civilization. Buildings, railways, canals, bridges, telegraph lines, aerial and submarine, everything, in short, has its appropriate tool or explosive. The result is to add, very materially, to the number of necessary vehicles, and so to the length of the train. I find, from a rough computation, that a division with its artillery and trains, will occupy nearly four miles of road. This makes a very long column. I find that the Russian division, in column of route, takes up about the same length of road as was required for a division of the cavalry corps of the Army of the Potomac; but is considerably less strong than the latter in fighting men, and so presumably less effective in a military sense. When we consider the detachments that are needed to protect led horses and trains, I think it will be found that one of our cavalry divisions was nearly twice as effective as one of the Russian divisions, fully equipped for the field.

Books consulted in this compilation:

The Armed Strength of Russia.
Daily News Correspondence of the War between Russia and Turkey.
Cavalry in Modern War.
Notes sur les Cavaleries étrangères.
Green's Army Life in Russia.
Journal of the United Service Institution.
Revue Militaire de l'étranger.
Blackwood's Magazine.
Dennison's History of Cavalry.

The destruction of railways, and the construction, or reconstruction of bridges, during the rebellion, were accomplished with the most meagre of equipments in the way of tools. The most effective examples of railway destruction were accomplished with but two elements—human strength and fire. Stretches of track of from a half to three-quarters of a mile in length, were overturned—not such a difficult thing to do as one would suppose, with the old fashioned chairs and fastenings that were used in the construction of the southern railways. The ties were piled up cob-house fashion, and fired; the rails were then laid on and bent by the heat. If time was available, the heated rails were bent around trees, or tied in hard knots—an unnecessary refinement of detail, since the bending alone rendered the rails unserviceable and made rerolling necessary.

In building bridges the ax was generally sufficient. An auger and a few spikes were regarded as luxuries bordering on effeminacy. Such bridges were, of course, only fit for the passage of infantry and light trains. If considerable amounts of artillery were to use the bridge, their battery wagons furnished everything that the most punctilious bridge-builder could hope for. The building or rebuilding of railway bridges was done by a special corps, supplied with the proper tools and materials; and the merit of their work lay, not in doing the thing at all, but in doing it with unexampled rapidity. This corps was recruited from the bridge and track departments of existing railways, and was composed of men who had been doing practically the same thing in the employ of railway corporations. These gangs are still an essential feature of the administration of all American railways, and I have no doubt will be found as safe a reliance in the future, as they have proved to be in the past.

FIRST LIEUT. FRED S. FOLTZ, 1st Cavalry:—I am particularly struck with the fact, brought out in Lieut. ELLIS' paper, that, although the Russian cavalry is armed with special reference to fighting on foot, yet it dismounts but half its strength.

One of the four sections of the squadron remains mounted to guard the horses, and every third man of the remaining three sections is a horse-holder.

Our system appears to be better than this in this particular, but we can do better still. We can supplement our system of holding horses by the Italian system of bunching them, and thus, in perhaps half of the occasions for fighting on foot, put every man on the fighting line.

In the Italian cavalry the horses of each platoon are tied short to an iron ring, in such a way that they form a compact, circular bunch; heads at the center and tails out.

These bunches are incapable of motion and do not even require watching, as the yielding nature of the point of attachment makes it almost impossible for a horse to break away while, if a horse is shot, the bunch is only anchored more securely. The iron ring used is about one foot in diameter and is braced by two cross-bars. I have experimented with this system and have found it thoroughly satisfactory.

For the iron ring I substituted a coiled lariat, and believe this to be an improvement, as it is stronger, lighter and dispenses with the carrying of a special equipment.

With sixteen horses in the bunch I found it impossible to stampede it, although I tried in every way to do so. There was no drifting worth mentioning, nor did any horse succeed in breaking away; half the animals were taken from the ring before the bunch could be driven off.

I did not pursue the experiment to ascertain the smallest number that could be securely bunched; this limit will, of course, be reached when—with horses tied short, noses together and shoulder to shoulder—the circumference of the circle is not more than half filled.

Twelve horses can, I think, be bunched perfectly, but I doubt whether we can securely bunch a smaller number than eight.

FIRST LIEUT. O. L. HEIN, 1st Cavalry:—It seems to me that there is a tendency in our service and of frequent occurrence, to confuse the terms mounted infantry and dragoons, terms in my opinion, by no means synonomous. The armament and employment of these two arms are entirely different. The mounted infantry are in no sense cavalry, they are only intended to fight on foot, their horses being provided to enable them to make long and more rapid movements than the ordinary infantry soldier could accomplish. Their arm is the infantry rifle, and their instruction in riding needs be of the most elementary character. The horse with them is simply a means of locomotion and not a weapon—whereas with the cavalryman, the horse is his first weapon. The modern dragoon first appeared in our Civil War, and his prototype can not only be seen in Russia, but everywhere abroad. Indeed the great bulk of the cavalry in the armies of all the great continental powers are virtually dragoons, for they are mostly armed with carbines and sabers—whereas the genuine mounted infantry can only be found in England, and is of recent date.

I think the gentleman is in error in his assertion that the tendency in Russia at the present time, "is to fashion all the cavalry on the model of mounted infantry (dragoons)," and I quote from Col. VON LÖBELL'S *Annual Report upon the Changes and Progress in Military Matters During 1882*, as follows:

"In Russia no efforts have been spared to increase the mobility and independence of the cavalry. The general expectation, that, with the conversion in 1882 of the hussars and lancers into dragoons, the Russian cavalry would resolve itself into mounted infantry has not been fulfilled. The special characteristics of cavalry have been jealously retained, and it is expressly laid down that its primary rôle is that of cavalry, though it is intended and trained to act dismounted on occasion. The object in view when the conversion was effected was to form of the cavalry a large and uniformly equipped body, that should be able to move promptly and independently across the frontier in the event of war, and by its action delay in every possible way the concentration of the enemy's troops."

In "*Notes sur les Cavaleries Etrangères 1883*," the armament of the Russian cavalry regiments is given as follows: "The cuirassier regiments (four in number,) front rank armed with revolvers, swords and lances, the rear rank with revolvers and swords; dragoons, (forty-eight regiments,) are armed with carbines, bayonets and swords: the non-commissioned officers and trumpeters with swords and revolvers: lancers, (two regiments,) front rank armed with lances, swords and revolvers, rear rank with carbines and swords: hussars, (twelve regiments,) are armed with carbines and swords."

From this it will be seen that of the fifty-six regular regiments, all are armed with sabers: forty-eight regiments with carbines, while only the four cuirassier regiments and the front rank of the two lancer regiments have revolvers.

The Don Cossack regiments are all armed with sabers, and Berdan carbines without bayonets: the front rank men have lances also.

The following quotation is from the Russian cavalry regulations, "*Notes sur les Cavaleries Etrangères of 1883*:"

"The main rôle of the dragoons is that of cavalry; they are only required to fight on foot in exceptional circumstances, to hold the ground temporarily until the infantry comes up, in defiles, crossings of rivers, attack of villages, etc. Whenever the ground is favorable, they must fight on horseback, whether opposed by infantry or cavalry."

If the idea is ever allowed to prevail in our country that the mounted arm of the future is mounted infantry, it seems to me the days of our cavalry are numbered.

FIRST LIEUT. E. SWIFT, 5th Cavalry:—I think Lieut. ELLIS is mistaken in saying (I quote from memory) that the Russian cavalryman relies but little on the revolver. There is very good authority for the statement that the Russian cavalry is largely armed with this weapon and that it is taught to depend, to a great extent, on its use. See the *Army and Navy Journal* of February 4, 1888, the *Journal of the Royal United Service Institution* for 1886, No. 136, and *The Modern American Pistol and Revolver*, page 129.

PROPOSED REVISION OF OUR SCHOOL OF THE SOLDIER MOUNTED.

BY S. C. ROBERTSON,

SECOND LIEUTENANT, 1ST CAVALRY.

AT our last meeting it was resolved that this Association consider in sequence the needs of revision of the different portions of our cavalry tactics, formulate its individual or collective ideas concerning them, and submit the result to the Washington Board now engaged in the revision of our general tactics. This resolution of the Association would seem to be a wise one. It is in compliance with the request of the tactics board itself, which seeks information and suggestion from any and all quarters of the military service; and it cannot fail to possess value to the cavalry service if it succeeds in developing the views of the many cavalry officers of experience, from different regiments, who are present at this, our largest military post. The subject is certainly one meriting any effort that may contribute in even the smallest degree to the efficiency and improvement of the new tactics. None are more directly interested in these tactics than the younger officers of our cavalry service, for these tactics may be the law and gospel of their professional career for the next twenty years, and it must be to every officer of the arm a painful prospect to be bound for such a length of time by a code for which he can find neither reverence nor belief. Although not as prone to take up the pen to defend or advance their ideas on tactical points as the officers of foreign armies, and although often apparently indifferent to these subjects — an impression that would certainly be given, for instance, by their silence for fifteen years under the system imposed on us by the assimilated tactics of 1873— none are quicker than our own officers to detect the weak points of any code of instruction they may be required to follow, or more apt to treat a system in which they have no confidence, with indifference and contempt. The fatal results of such a feeling to any service are apparent from its effect in our own cavalry during recent years, and it is surely the desire, as it should be the aim, of every cavalryman interested in his arm to see the weak points eliminated from the tactics now being devised for our use.

In pursuance of this idea, and of the resolution of the Association to discuss the various schools in order, I shall submit to you this evening some ideas relating to the revision of our school of the soldier mounted. I do not intend here to go into all the *minutiæ* of commands and movements proposed for a revised system of instruction, but merely to offer a brief abstract of what, it is thought, might and should be done in this direction.

My conclusions are founded upon some personal experience with different schools of riding, and are, whatever may be their value, certainly not the result of *prejudice* in favor of any particular system.

With this preface, I will say that I consider the training of the soldier in the principles of the school we are considering as by far the most important portion of his military education. I wish however to record myself as distinctly opposed, whatever I may have thought as a younger man, to imposing upon our trooper the refinements of the *haute école* of riding as taught abroad; for the instruction of this school contemplates a cavalryman fighting with the saber and requiring a horse delicately balanced and thoroughly trained for the purpose of individual combat. My knowledge of the cavalry operations of our own great war and of the style of trooper developed by them, cannot allow me to believe the methods of such a school necessary or practicable for the recruit in American cavalry, or in any cavalry which, like it, has abandoned the groove of the old system still used in Europe. And yet I believe thorough instruction in *some* of the principles of horsemanship is to-day more necessary than ever. The leaders of the American cavalry between 1861 and 1865 formed it into an arm more active and destructive than any cavalry the modern world has known. Its history during the last three years of the war, was a history of incredible distances covered on its marches and raids. A column on such expeditions was often kept in the saddle almost without rest or sleep through several successive days and nights, meanwhile frequently meeting its foe in bloody encounters in which the troopers used their arms effectively both mounted and on foot. Speed, dash, and endurance were the factors which most frequently won success in such operation.

In future war in this country and in the course of time, we predict, in Europe also, this method of using cavalry will undoubtedly obtain to even a greater extent than in the war of 1861-1865, and the demand upon the future cavalryman will tax, as war has never taxed before, his own skill and endurance, as well as the endurance of his horse.

The question concerning our cavalry recruit then must be: "How shall we best fit him to meet this demand?" I would unhesitatingly answer: "First of all, by a training in horsemanship which shall give him the greatest ease and confidence in the saddle; which shall enable

him to make the longest rides with the least liability of bringing back a broken-down, or sore-backed horse; which shall teach him at need to use his weapons, whatever they may be, with safety and effect from the saddle, as well as on foot, which in short shall make him in his relation to his horse as *much* like the Indian or Cossack as training at the age of manhood *could* make him." A cavalryman thus formed is a cavalryman ardent, impetuous, self confident, and capable of getting the greatest effort possible out of the animal he rides. Such a soldier, no matter how he be armed and manœuvred, is far, *very* far removed, it seems to me, from the "mounted infantryman" we hear so much of—a man devoid of the *esprit* of the mounted branch, untrained in horsemanship, timid in his unaccustomed perch, the saddle, and fatal in his ability to use up the horseflesh which carries him from point to point. We are, however, probably all agreed, without the necessity of argument, that horsemanship should be the solid base on which the whole education of our recruit should rest, and that the tactics should impart it to the degree necessary to turn him out the efficient trooper outlined above.

Does the instruction contained in our present "School of the Soldier Mounted," suffice for this? All of us will probably answer "no." Let us first consider its defects and afterwards suggest the remedy.

Our first objection is its brevity, especially as far as equitation proper is concerned.

Out of 514 pages in our cavalry tactics the number devoted to the soldier mounted is but forty and much of this is *consumed* by instructions for folding the blanket, saddling, use of the carbine mounted, and so on. In other words, about a little less than one-thirteenth of our entire drill book is devoted to this most important of *all* the schools of training through which the recruit passes. It is significant to state that in these same *cavalry* tactics the "School of the Soldier *Dis*mounted" embraces sixty-six out of the 514 pages, or a little less than *one-eighth* of the whole.

In the old tactics of '41 the "School of the Soldier Mounted" comprised seventy one out of the 450 pages, or more than one-sixth of the whole.

In the present English tactics ninety-five out of 500 pages, or nearly one-fifth of the whole In the present French manual 102 out of 472, or more than one fifth of the whole.

The *movements* given in the few pages of our present tactics in the school we are discussing are, as far as either horse or man is concerned, limited to the following:

To mount in line with intervals, (horse unsaddled); to dismount in line with intervals, (horse unsaddled); to march; to halt; to march by flank from line with intervals; to march to the rear; to oblique; to change direction in column of files; to rein back; to mount in line, (horse unsaddled); to march by flank from line; to form line to the right or left from column of files; to dismount in line, (horse unsaddled); to change hands in riding school; to trot; to pass from trot to walk; to pass from head to rear of column; to pass from rear to head of column; to increase or diminish rapidity of trot; to pass from halt to trot; to halt from trot; to mount, (horse saddled); to dismount, (horse saddled); to gallop; to pass from gallop to trot; to passage; to leap ditch or bar.

These are absolutely all. One thing I would call especial attention to, and that is that the first and fundamental step in the training of the trooper is entirely omitted, viz: the application of the principles relating to the use of the leg. The proper method of applying the leg is briefly explained, 'tis true, in paragraph 382, but this paragraph is followed by no movement in which these principles governing the use of the leg are practically taught the trooper. This use of the leg is the secret and foundation of any horseman's skill with his steed. It certainly cannot be learned by the "march by the flank," as explained by our tactics, nor by the "right (or left) about," for all of these are turns on a considerable arc of a circle requiring no delicate application of the legs, or "aids." In all other tactics this use of the leg is taught by two movements, and in our tactics of '41, seem to be considered an indispensable preliminary to all the other instruction of this school. These two movements are the "turning on the forehand" and "turning on the haunches."

In each of these movements the bridle hand, the left leg, the right leg, each has a distinct and separate part to play, and yet all three act in most perfect unison. The result is to teach the trooper, in the course of time, to *instinctively* apply these different forces, obtaining by the slightest or most delicate touch, after a few lessons, an instant pivotal movement around either the fore or hind feet. No other movement known so tends to the making of horse and rider parts of the same machine as this, and no other movement can supply its place in teaching the rider the effects of and relation between the leg and hand movement, or in giving to the horse an idea as to what is required of him by the application of either. Another practical result of this exercise about forehand or haunches, besides the lesson it gives to the hand and leg, is that it enables the rider, when it is thoroughly learned, to wheel his horse quickly on either pivot in a space no larger than a hat, thus accomplishing by this manœuvre alone one of the most valuable of all the movements of a military charger, should his rider use him in a mêlée with either pistol or saber. It is also a necessary movement for any pivot file, where the fixed pivot is used.

And yet this exercise, important as it is universally recognized to be to both rider and horse, is not deemed worthy of a place in our "School of the Soldier Mounted," but is relegated to a corner in a small lot of

heterogeneous matter in the back portion of our tactics. It seems to be mentioned there incidentally only, and is unaccompanied by any command for imparting it in the way of instruction.

The pruning of the old tactics by which our present school was evolved must surely have been done by very injudicious hands when such first principles are omitted. I, however, about a year ago, talked with one of the cavalry members of the '73 board on this subject, and it is but fair to the cavalry arm to say that this officer assured me that the voice of the cavalry officers of the board had very little to do with the formation of the new manual.

I will close my observations as to the brevity of our instruction in this school by remarking that at the Military Academy it is found entirely inadequate to the riding-hall training of cadets, and that it has been supplanted there by additional exercises introduced by various instructors in riding. Mounting and dismounting at various gaits, reaching for heads on the ground at the gallop, riding without reins, and various gymnastics mounted, are among the many important exercises supplied by such instruction, and none have, in my belief, proved more valuable to the graduate of the Academy school of riding. These exercises, though they for the most part come rather under the head of calisthenics mounted than of equitation proper, should surely have their place in the "School of the Soldier Mounted."

2. Next to the brevity of this school we shall briefly consider the correctness of the principles of the school as it now stands. Frankly, I am, after something of an acquaintance with foreign schools of riding, not an adverse critic of our own, save in some minor respects. In other words, I should say that the principles should stand as they are. We are certainly not trained to any knowledge of an accomplished cross-country seat, nor do we know from West Point, or the tactics, anything of the pleasures of the jockey style of riding (I don't mean simply the rising-at-the-trot, but the flat seat, short stirrup and low hands of the jockey as well). I think the experience of the cavalry officers here will bear me out in saying that our officers and men even ride with a longer stirrup than that prescribed by the tactics, which *does* allow four or five inches (to quote its exact language) between the crotch and saddle, the trooper standing erect in the stirrup. This length of stirrup, the position in which it is hung and the slope of our cantle, give the distinctive type to our style of riding. I should say that its main defect is that we ride *too much* the balance seat. Our stirrups being long and hung well to the rear, as they are on the majority of our saddles, and the cantles of the saddles being extremely vertical, out seat is not flat enough for the majority of men. The back of the trooper in this saddle is too often concave, and the line of his body from cap to stirrup too perpendicular, either for the greatest

ease or the greatest solidity of seat. In such a position we have the extreme of the balance seat. The position is graceful and erect, but to the practiced eye of an old cavalryman, or any experienced horseman, it does not look as much like business as a seat with a somewhat shorter stirrup—way down in the saddle, with the back almost bowed out rather than in.

These defects of the hanging-place of the stirrup and the slope of the cantle, tending to this exaggerated position, are being now remedied in the trees supplied by the Ordnance Department in the last year or two, the stirrup loop in them being placed farther to the front and the cantle being made flatter. These changes are very necessary if we wish to have a flatter seat, for no system of riding can be taught in a saddle whose construction is not in accord with the principles of that system.

I would say, then, that our military seat with these modifications as to length of stirrup, position of stirrup and slope of cantle, is a very excellent one—as good as any military one in the world. Cross-country riding and jockey riding are delightful accomplishments belonging to another school of riding. They concern the officer rather than the recruit, and being for amusement rather than military use, perhaps have no place in any such paper as this. As to a proper length of stirrup it seems to me that the language of the present English tactics is very good: "The foot should be kept in its place by the play of ankle and instep, the stirrup being under the ball of the foot. The instructor must remember, however, that though he shall follow the general rule in fitting the stirrups, a great deal depends on whether the rider has a thin flat leg, or the reverse; a man with a thick thigh requires slightly shorter stirrups, or, when the horse is in motion and the muscles are brought into play, he will not have a proper hold of the stirrup. The ride should be slowly trotted round the school or manège, and if a man is then seen to be well down in his saddle, with his leg in the proper position, with his heel down, and yet not to have a proper hold of his stirrup, the stirrup requires shortening." This rule would seem to give about the perfection of the length contemplated by our own system of riding and I should adopt it almost verbatim for our new tactics.

Before leaving this subject let me say a word on the English trot. This trot is condemned ignorantly by a great many people in this country, not so much on the very reasonable ground of ungracefulness as on the charge of its being an affectation—of being in reality more fatiguing than the close trot. To these critics it seems that some extra effort *must* be necessary to raise the body from the saddle at each alternate hoof-beat of the horse. Such people have never learned this trot, but have by a few trials only, convinced themselves of its impracticability. They should take up their stirrup leathers, about two holes at least, sit well down on a flat (preferably English) saddle and then spend a week or two in an

honest effort to learn it. They will then find that the extra effort required is only a seeming one and that having caught the motion they may take off their stirrups and still be propelled from the saddle by it. It will be found, when thus thoroughly learned, surprisingly easy, the pleasure of the motion increasing with the roughness of the trot. Whether this style of riding be easier to the animal, it has never yet been proven. The French entirely adopted it in 1876 and several other European cavalries have partially accepted it, the Germans, I believe, using it for field work.

But I would not be an advocate of this system for our own service. Its extreme unmilitary appearance and opposition to all traditions of military riding should, I think, condemn it in spite of its advantages to the rider. I have seen some thousands of French cavalry at the Paris reviews riding, each regiment, at squadron front at this trot. The absurd appearance of these troopers rising and falling out of time must certainly have been very damaging to any troops in the estimation of the public observing them.

Whether, though, it would not be a very good idea to instruct our troopers that they might be allowed in campaign, where long distances at the trot are contemplated, to slightly shorten the stirrup and lean forward to a very gentle rise in the saddle is another question. Practically many of us who have had to make such long distances at the trot, have found the comfort of changing to this style after some miles of the close trot.

Leaving the question of the seat, I would dwell on a few minor points in the school we are discussing as ones which might need revision.

TO MOUNT.

Paragraph 373, explaining how to mount, horse unsaddled, says, at the command: "Prepare to mount," "take two side steps to the right, sliding the hand along the left rein, etc." This would simply place the recruit twelve inches to the right, the side step being six inches. It should read: "Step two full paces to the right, etc." Same for horse saddled.

It has been suggested by an officer present and I have heard it argued elsewhere, that this paragraph ought also to contain provision for mounting on the off, as well as the near, side. The possible advantages to the trooper are obvious and I should so modify the paragraph.

POSITION OF SOLDIER MOUNTED.

Paragraph 374, prescribing position for soldier mounted, horse unsaddled, says: "buttocks bearing equally upon the horse's back and as far forward as possible." This paragraph is a pernicious one. It, to my own knowledge, has given many men a very erroneous idea of the object aimed at by it. They have interpreted it to mean that a man should actually sit as far forward as possible. This is by no means what is intended. The intention of the paragraph is that the trooper shall "find his seat," or in other words, sit as flat as possible. In the explanations of the reasons for this position which follows, the object of the expression "buttocks as far forward as possible," is given to be: "That the thighs may readily clasp the horse." This can mean very little, as the buttocks being thrown forward, would tend in no especial way to this end. This explanation stands to-day in our tactics probably because it existed in the old French tactics from which our own were taken. The true and corrected explanation of this position is given in the present French manual which says that it is "in order that the buttocks may seek the bottom of the saddle" (the principles being the same whether the horse be saddled or unsaddled).

I would then substitute for this paragraph in our own tactics, as it now stands, the following:

"The buttocks bearing equally upon the horse's back, the seat being as flat as possible." In paragraph 420, pertaining to the position mounted, horse saddled, I would insert for what now appears, the following: "The buttocks bearing equally upon the saddle, as much of the trooper's back as possible being in the saddle."

TO LENGTHEN AND SHORTEN REINS.

Paragraphs 375 and 376 prescribe a long and complicated manner of lengthening and shortening reins.

The reins being in both hands the instructor commands: 1. Lengthen. 2. Left rein.

Paragraph 375 says: "At the second command bring the hands toward each other without turning them in, grasp the left rein with the thumb and forefinger of the right hand one inch from the left thumb, (two) half open the left hand and allow the left rein to slip until the thumbs touch; close the left hand and replace the hands."

Paragraph 376 prescribes a similar method for shortening reins.

I would suggest the doing away with both these paragraphs as unnecessary. The recruit can readily lengthen and shorten reins without prescribing a tactical method for doing it.

TO FILE OFF.

Paragraph 380 prescribes that the horses are returned to the stable or picket line by the command: "1. By the right file off; 2. March," at which it says, each recruit "leads his horse four yards to the front, etc." I would make this two yards instead of four As it is, recruits mounted in line very frequently confuse the movement "1. By file; 2. By the right flank; 3. March;" with this and take four yards instead of two, in moving to the right. It would seem that two yards to the front is enough distance in leading off and the confusion now caused by the two distances would thus be removed. At the suggestion of another officer I

would also recommend that this movement be performed by both flanks simultaneously, by the command: "1. By two right and left file off; 2. March."

Paragraph 382, in discussing the use of the reins, says: "In riding the hand should be kept steady and ought not to move with the body." I cannot conceive the raison d'être of this sentence. Surely every hand which is light *must* oscillate gently with the motion of the horse. A hand entirely motionless is inevitably awkward and stiff in appearance as well as fatiguing to the rider.

In the same paragraph, in discussing the use of the, leg I would prescribe that every impulse of the leg be given by applying gently the inner side of the calf or boot, the heel only very slightly, if at all, turned in for this purpose. Many recruits when told to give the horse the right or left leg turn the toe out and give the animal a sudden blow with either the back of the leg, or the spur itself. I would emphasize this point as one of great importance.

DISMOUNTING, HORSE SADDLED.

In paragraph 422, instruction for dismounting, horse saddled, I would prescribe that the command: "Prepare to dismount," the left foot should be withdrawn from the stirrup, leaving it inserted only to such a length as to be able to support the body as it is coming to the ground. Men frequently neglect to do this, and after reaching the ground use the left hand to disengage the foot, with obvious danger to themselves should the horse start forward at this moment with the foot in the stirrup.

There are points open to slight criticism in paragraph 428, explaining the principles of the gallop, and also in paragraph 431, relating to leaping, which I will not go into here.

3. The third objection which presents itself is the position of this school in the cavalry tactics and the separation of its different principles throughout the tactics. I would make the "School of the Soldier Mounted," as it is in the English manual, the first school to be learned by the recruit, and therefore give it the first place in our new tactics. The few principles of dismounted drill necessary to teach the recruit in order to fit him for roll calls, marching to and from stables, and the mounted drill ground, can be very easily taken from the "School of the Soldier Dismounted," following that of the soldier mounted. The result of the present relative positions of these two schools is that a recruit who joins, let us say, in the fall or winter, is in the spring put *first* through several weeks of foot drill and manual with the carbine, and if ordered into the field at the end of this time, as frequently happens in the west, finds himself entirely ignorant of the most important thing he really has had to learn to fit him for campaign, viz: how to ride. The result can be testified

to by many an unfortunate troop commander burdened with such recruits on their first campaign. This reversal of the present order of the schools, too, would produce in the recruit's mind the proper idea of the superior importance of his training as a mounted man to his training as an infantry man. There are few things in the present "School of the Soldier Dismounted" actually necessary to a cavalryman's education, assuming that he is not kept principally to help swell the battalion drills and dress parades of an infantry command. The existence of the present Manual of the Carbine, like the double rank, and many movements of the "School of the Battalion Dismounted," is all the result of the idea of assimulation and is of no direct value whatever to the cavalry soldier. If cavalry troops are to be trained in all the niceties of marching and manual necessary to enable them to appear day after day on parade, the rivals of their infantry brethren in skill in these essentially *dismounted* duties—if the time and labor necessary to bring a cavalry command to such a degree of perfection for the purpose of mere empty show is considered better spent in this way than in the serious business of training it for the actual necessities of war—let the "School of the Soldier Dismounted," with its large preponderance of matter stand in its present *first* place in our cavalry tactics. If not, let it, purged of all the instruction not actually essential for a few garrison ceremonies (dress parades dismounted *not* among them,) or for fighting on a dismounted skirmish line, yield its place to the "School of the Soldier Mounted."

In accordance with what seems to be the unanimous sense of this Association, I would change the designation also of this school and call it "the school of the individual trooper."

What was meant just now by the separation of the principles of the school into different parts of the tactics, was that for convenience sake I would combine in the school of the soldier mounted, all exercises for the training of either the trooper mounted, or of the horse, it being difficult to separate the two.

There are two other points to which before leaving this subject, I would briefly allude.

Should our first mounted instruction be on stripped saddles, (viz: saddles without stirrups) or bare-backed?

Many of the continental services have abolished bare-backed riding. The English still retain it, and I should say that if our recruits were allowed the necessary time for instruction, the bare-back system would always prove an advisable preliminary; if he is to have but a week or two of such exercises, I should say that he should at once be put in saddles without stirrups.

The other point relates to the curb rein. I would recommend most strongly either the use of the snaffle with the curb, upon certain horses

whose mouths are found to require it, or else the general adoption of the double ringed curb bit with two reins. As an officer of the Association remarked at the last meeting, those people — good riders — who habitually use the curb alone are people who ride with a loose rein — a thing impossible for a trooper to do using his arms mounted or in the ranks at drill. We are the only civilized military horsemen in the world who thus use the curb alone, and our animals mouths, especially after some days of fast drill, show the result of it, as probably each of the troop commanders present can attest. I have now called attention to all of the features of our school of the soldier mounted, which in my own opinion would seem to need revision, considering, however, only that portion of the school relating to equitation proper.

The revision I have suggested is by no means a sweeping one. The main changes are:

First.— To enlarge the scope of instruction by the addition of certain exercises of direct value in mounted instruction.

Second.— To modify a few minor portions of the school as it now exists.

Third.— To give the school the first place in the new manual and to include within it all the principles relating to the training of the mounted trooper or management of the horse.

I would classify instruction in the new school something as follows:

First.— Description (with plates) of regulation bit and saddle kit.

Second.— Proper method of bitting, saddling and arranging equipment.

Third.— Elementary rules for training remount horses.

Fourth.— Equitation proper (including mounted gymnastics).

In regard to the first heading — description of kit — I will say that there is now no complete description of the regulation bit and saddle to be found without going through files of general orders several years old. It would probably be interesting to know how many officers or men in our cavalry can now accurately describe the equipment, how many sizes of bit and saddle there are, what the dimensions of the different sizes are, of what material each article is made, the nomenclature of the different parts, &c., &c. This would seem to be information very desirable for the cavalryman to know.

Information under the second heading — bitting, saddling and arrangement of equipment — is still more practical and important. I would include in this the proper manner of packing the saddle for the field, and prescribe the exact articles to be carried in each saddle-bag. I would also add the description contained in the tactics of 1841 for folding the overcoat. These details are of the highest importance to the efficiency of our soldiers in the field, and the tactics — *not* general orders — would seem the proper place to find them.

The rules included under the third heading — for training the remount horse — would simply include the brief instruction necessary for the trooper to adapt to his use any green horse with which he may be forced to supply the loss of a trained animal in the field.

Under the fourth heading — equitation proper — I have included mounted gymnastics. I would refer to the excellent little manual of such gymnastics devised by Captains GODFREY and AUGUR, of our cavalry, as containing everything necessary to incorporate in this portion of the instruction.

To close, I will say that two things are necessary for the success of this, or any other system of instruction of the soldier mounted. The first is the presence of good riding tracks or halls in all our cavalry garrisons. That there should be no riding halls or riding sheds in any of our military garrisons except West Point, seems hard to understand. In every post, fall recruits, and men who have been deprived by field service of proper instruction during the months when out door drill was practicable, could be put in excellent shape for the saddle by riding hall exercises through the winter. In most of our western garrisons at present these months are necessarily idle ones, neither old soldier nor recruit being advanced a peg in mounted instruction during the interval. I need not refer to the many advantages to officers, men, and horses in the way of exercise, which would be afforded by such riding halls. They need not necessarily be very large or expensive, and considering their great value to the whole command, it would seem advisable that they should be the *first* structures erected at every large post at which cavalry may be stationed.

The second thing necessary for the success of this system is that it be enjoined on post commanders by an iron-clad rule — such as now obtains in the matter of target practice — that a certain portion of each spring be set aside for this individual instruction mounted, nothing but the imperative demands of field service being allowed to interfere with it. This rule should be imposed in the tactics itself. In the present French Code this individual instruction lasts about six months of the year. In our own this period of instruction rarely covers more than two or three weeks — a period absurdly inadequate for the purpose of making horsemen out of raw recruits. This tendency to abridge this school of individual instruction results from various causes; from the lack of interest, or expertness, of many troop commanders in the principles of equitation; from the fear that if too far prolonged, field service or some other accident will entirely deprive them of troop and battalion drill; and, from the

partiality which it must be said many post or battalion commanders of cavalry have for the showier movements of battalion drill. This latter is the school of drill, too, by which most of our inspectors guage the efficiency of our cavalry commands, and it is not unnatural that education of the soldier should be pushed and forced in order to make the necessary display in the annual inspections. This tendency should be sternly checked as the most fatal one in our whole cavalry instruction.

It should be prescribed in tactics that our recruit should have at least two months daily drill in the individual school mounted at all posts; and at posts where riding sheds may be erected in the future this should be supplemented by drill during the winter in these sheds.

Troop commanders and field officers would, if the proper facilities of tracks, sheds, and sufficient time, be guaranteed them, undoubtedly take as much interest in this school as they now do in the higher ones, and the younger officers and men soon learn to base their *esprit* and claim for superiority upon what must always be the ground work of any cavalryman's efficiency — fearless and skilful horsemanship.

PROFESSIONAL NOTES.

LONG DISTANCE RIDES.

A résumé of some remarkable rides, translated from the *Revue de Cavalerie*.

BY 1ST LIEUT. O. L. HEIS, 1ST CAVALRY.

These rides (übungsritte) for the purpose of training men and horses to cover long distances, and to test and increase their powers of endurance, have been *en vogue* for some time past in Germany, but have only quite recently been officially recognized.

In the early part of April, seven officers of the Bavarian Light Horse rode from Sarreguémines to Münich, 287 miles, in five days, making an average of six and one-quarter miles an hour.

The daily ride usually began at 6 A. M. and ended at 7 P. M., with a halt of from three to four hours at noon. The itinerary was as follows:

April 7th, Sarreguémines to Pirmasens, 40¼ miles.
April 8th, Pirmasens to Bruchsals, via Landau, 58½ miles.
April 9th, Bruchsal to Cannstadt, via Illingen, 42 miles.
April 10th, Cannstadt to Ulm, via Geislingen, 56 miles.
April 11th, Ulm to Augsburg via Zussmanhausen, 47¼ miles.
April 12th, Augsburg to Münich, 38½ miles.

The trot was the habitual gait, except when passing over very hard roads, through villages and up and down hill, when the walk was strictly adhered to.

The horses were allowed to drink moderately whenever the opportunity afforded, and six out of the seven had good appetites throughout the trip; the seventh, a thoroughbred English mare, refused her food the first two days out, but afterwards was no longer troubled in this respect.

The daily grain ration varied from fourteen to nineteen pounds. The horses were smoothshod, and in no instance required re-shoeing during the journey.

Both men and horses were weighed at the beginning and end of the trip, with the following result:

No. 1.— East Prussian horse, twelve years old, carrying 178 lbs., weighed 1199 lbs. at the beginning of the ride and 1111 lbs. at the end; loss, 88 lbs.

No. 2.— Bavarian horse, twelve years old, carrying 202½ lbs., weighed 1012 lbs. at the beginning, and 946 lbs. at the end of the ride; loss, 66 lbs.

No. 3.— East Prussian horse, twelve years old, carrying 191 lbs., weighed 902 lbs. at the beginning and 836 lbs. at the end of the ride; loss, 66 lbs.

No. 4.—East Prussian horse, eight years old, carrying 211 lbs., weighed 1056 lbs. at the beginning of the ride and 990 lbs. at the end; loss, 66 lbs.

No. 5.—English thoroughbred mare, nine years old, carrying 165 lbs., weighed 935 lbs. at the beginning of the ride and 906¼ lbs. at the end; loss, 27¾ lbs.

No. 6.—East Prussian horse, nine years old, carrying 165 lbs., weighed 990 lbs. at the beginning of the ride and 963 lbs. at the end; loss, 27 lbs.

No. 7.—Prussian horse, eight years old, carrying 206 lbs., weighed 1001 lbs. at the beginning of the ride, and 996 lbs. at the end; loss, 5 lbs.

The average loss in weight of the officers was 4 lbs., and of the horses from 4 to 88 lbs. At the end of the ride both officers and horses were carefully inspected by officers of high rank, and were found to be in excellent condition.

A PRACTICE RIDE FROM THE HAVEL TO THE DANUBE.

This ride was made by twenty-four officers of the 3d (Ziethen) Hussars, under the direction of the regimental commander, Lt.-Col. Von Podbielski, and was intended to illustrate the strategic forced march of an independent Division of cavalry, covering the left flank of an army, marching from the Havel to the Danube.

Each officer used one mount only during this ride, and their orderlies and a farrier under charge of a non-commissioned officer, were sent ahead each day by rail, to the several halting places, to care for the horses upon their arrival.

The horses ridden by the officers were thoroughbreds, half-breeds, chargers from the Prussian remount service, and in some instances troop horses.

The time appointed for the ride to begin was June 18th, and Bitterfeld, northeast of Halle, the rendezvous; to which point the officers rode from Rathenow, their garrison, a distance of about eighty-four miles, in three days.

On June 18th at 9 A. M., the officers divided up into a number of separate parties, each with a special mission, left Bitterfeld and rode to Merseburg. The distances covered varied from thirty-four and seven-eighths to fifty-three miles.

June 19th they rode as far as Naumburg, twenty-three and three-eighths miles, visiting the field of Rossbach en route, and on the summit of Janus Hill a conference was held on the battle of November 5th, 1757, a glorious day for the Prussian cavalry.

June 20th, (third day) they left Naumburg at 3 A. M., and rode to Rudolstadt. They were broken up into separate parties, and their itineraries varied from sixty-nine and one-half to seventy-five and three-quarter miles. On this day a visit was made to the battlefields of Jena, Auerstadt and Saalfeld, a historical conference being held at the last mentioned place.

June 21st, (fourth day) The party set out at 6 A. M., and did not reach Koburg, their halting place, until evening, some of the party arriving at 8 P. M., and the remainder at 10:30 P. M. They rode sixty-two miles, over a very broken country and through the Thuringian forest, and the day was intensely hot.

June 22d, (fifth day). The party made Bamberg. They were divided into three parties, and covered twenty-nine and three-eighths, thirty-one and five-eighths and thirty-five and seven-eighths miles, respectively.

June 23d, at 6 A. M. they proceeded to Nuremberg, their average march being thirty-seven miles.

June 24th, they rode to Weissenburg on the Rezat, thirty-one and five-eighths miles.

June 25th, they set out at 4 A. M. (divided into eight parties) and advanced to the Danube, sixty-two miles. They approached this river on a front extending from Marxheim to Donauwerth, and at the latter place a long halt was made. In the evening they proceeded to Nordlingen.

June 26th, they rode to Schwäbig-Gmund, thirty-seven miles; June 27th to Ludigsburg, thirty-four miles; June 28th, to Heilbronn, twenty-five miles; June 29th, to Mergentheim, forty-three and a half miles; June 30th, to Wurzburg, thirty miles. This was the last stopping place, whence the officers proceeded to their station by rail.

They had ridden 559 miles in thirteen days, exclusive of the three days' march to Bitterfeld, their initial point of departure.

The longest day's march was seventy-five and three-fourth miles, the shortest twenty-three and three-eighths miles, and the daily average forty-two miles. The first seven days the average was fifty-four and three-eighths miles.

The intensely hot June weather made this ride exceedingly uncomfortable, but what chiefly fatigued the party was the loss of sleep, and other discomforts occasioned by numerous receptions and fêtes en route.

The horses used on this march had had no special preparatory training, and with but two exceptions, (one horse crippled and one foundered) made the journey without injury.

A DISTANCE RIDE FROM BRANDENBERG TO PARCHIN AND RETURN.

On July 21st, Lieut. Von Pelet Narbonne, 6th Cuirassiers, rode from Brandenburg to Parchin, a distance of ninety-three miles, in twelve hours, and on the following morning, at 6 o'clock, started back on the same horse, making the return trip in twelve hours.

RIDE FROM STADE TO BERLIN.

Lieutenant Von Sebach, Division Adjutant of the 9th Field Artillery regiment, rode from Stade to Berlin, 246.6 miles in four days, the daily average being 61.6 miles. First day, 68.3 miles; second day, 65.1 miles; third day, 60.2 miles; fourth day, 52.8 miles. The charger ridden was a thoroughbred English mare, six years old.

In connection with this subject, it may not be uninteresting to recall two very long rides made by detachments of U. S. Cavalry, during the years 1870 and 1880.

In 1870 a small detachment of three or four men, of H Troop, 1st Cavalry, started from Fort Harney, Oregon, with dispatches for the commanding officer of Fort Warner, Oregon, Col. E. Otis, now 8th Cavalry, the distance being 140 measured miles, over a rough, broken country, with bad water and scarce at that, and bad road, about twenty miles of it being heavy sand, the actual time between the two posts being twenty-two hours, and actual time of travel eighteen and a half hours, or a little over seven and a half miles an hour, the horses being in excellent condition on their arrival at Warner. After one

day's rest the party returned, marching at the rate of fifty-five to sixty miles a day, both men and horses reaching Harney in good condition. This trip was made without any preparation whatever, of either man or horse.—*Army and Navy Journal.*

In January, 1880, Lieut. ROBERTSON, 1st Cavalry, with Sergt. LYNCH, Troop D, and Sergt. PRICE, Troop E, 1st Cavalry, left Fort Lapway at 10 o'clock at night in pursuit of a deserter from Troop "D," *same regiment; arriving at* Fort Walla Walla, W. T., next night at 9:30 o'clock. Distance traveled 102 measured miles. There was snow on the ground at the time, it being on some of the higher table lands as much as one foot deep. This, and the ice on the valley roads much retarded the rate of travel. The following was the itinerary:

Left Fort Lapway, Idaho, at 10 P. M., reached Flather's ranch at 2 A. M., thirty-one miles, (average about *eight miles an hour*); rested and fed, and took the road again at about 7 A. M., not halting again until Dayton, W. T., was reached at 1 P. M. Halting there one hour to feed, and then without halt to Walla Walla. This made about five miles an hour during the day. Started back next day, the sergeants' horses being in excellent condition. Lieut. ROBERTSON rode a horse that had once been foundered, and showed lameness on the return trip, which was accomplished in two days.

SADDLE UP.

BY W. P. HALL,
CAPTAIN 5TH CAVALRY, U. S. A.

The diversity of position which the saddle occupies upon the horse's back and the indifference upon this point by many experienced horsemen would lead us to believe that it was really a matter of small moment where it was placed. We believe it to be a matter of importance second to none in the management and care of horses.

"*Place the saddle on the horse's back* well forward on the withers," is, we believe, according to tactics.

The more we examine this position of the saddle, the more difficult it becomes to find a single good reason for so placing it. Certainly it requires no argument to prove that the front legs of a horse support more dead weight than the hind ones, when he is untrammelled by rider or harness, because they not only support the chest, but the entire weight of the head and neck, *besides supporting their portion of the body.*

By the term "dead weight" is meant the weight when the horse is perfectly quiet. We have all seen how beautifully the economy of nature has arranged for the horse to use his head and neck (while running loose) to diminish the effect of the weight upon the front legs. When galloping down hill it is particularly noticeable, that just as the front feet come to the ground, the head and neck drop quickly in order to remove the shock from these supports; but with a rider on his withers and that instrument of torture, the cavalry bit in his

mouth the front legs of our poor horses have little chance for relief in this quarter. To obtain this much needed relief to the front legs, is, we hold, the most urgent reason for placing the saddle much in rear of its tactical location.

We believe that 90 out of 100 cavalry horses become used up in the front legs before they do in the hind ones. The legs are capable of resisting successfully a certain amount of strain and if either is taxed beyond the limit of its capacity, it will be the first to give away.

The horse when subjected to the weight of the rider, saddle and equipments placed upon his back according to tactics, sustains at least two-thirds of the weight upon his front legs, which there is no reason to believe are superior to the hind ones in capacity to bear *this kind of* weight. The back bone of a horse is not unlike an arch with the feet, front and hind, for the abutments. This arch is to a certain extent a flexible one, but has one of the great characteristics of this mechanical device, that of best supporting weight, when applied equidistant from the abutments.

The center of the back is also the center of motion, that is there is less motion at this point, than at any other along the back, making this the preferable place for the burden, for the reason that the supports have less inertia to overcome from a load at this point, than they do from one at any other. For the same reason the rider is subjected to less jar from the motion of the horse, his comfort at this point is also materially added to by the flexible and springing motion of the back which is greater in the center than at any other place. Another very important point to be considered is that the liability of the horse to fall when moving rapidly over rough country, is greatly diminished by placing the saddle *in the center of his back.* A horse saddled according to rule must from necessity have the cincha very tight around his chest, which is the part of the body where a large capacity to expand is most essential when the animal is undergoing severe physical exertion. Men who follow the business of training boat's crews for races or boxers for the prize ring would be considered as fit inmates for "Bloomingdale" were they to advocate the idea of placing an inflexible band around the lungs of their pupils, when fitting them for work; in fact, it seems to be a well conceded fact that we are capable of greater physical powers with a belt around the waist; and the habit of "girding up the loins" as an adjunct to great physical effort, is so old that its origin is contemporary with the period when man first commenced his struggle for existence. If there is one characteristic necessary in the conformation of a good saddle horse, it is high sharp withers, and upon these (with our system of placing the saddle) are formed the most troublesome class of sores to which a saddle animal is subjected. It is not an uncommon thing to hear it said by inexperienced persons that such a horse is not fit for saddle purposes on account of his high withers; by properly placing the saddle, the injury to these can be made a thing of the past and the chances of any injury to the back be reduced to a minimum.

The correct position of the saddle is obtained by cinching it *very tightly* so that the cincha shall be *midway* between the *elbow* and *stifle joint*, when the horse is standing square with his legs under him. It is of great importance that the cincha be very tight, in order to reduce as much as possible the slipping of the saddle upon the back. In this place it is far enough to the rear to prevent the action of the lungs being interfered with, and the confor-

mation of a horse's belly at this place is such that when a saddle is properly put on it will hold better than in any other position.

Major FRANCIS DWYER of the hussars in the Imperial Austrian service advocates this position of the saddle and it might be added, that for twelve years we have saddled our horses exclusively in this way and find that it has not a single objection.

THE IMPORTANCE OF PROPER BITTING.

BY CAPT. C. C. C. CARR,
1ST CAVALRY.

The paper on saddling recently read before the association has suggested an equally or more important subject, that of proper bitting. I say more important, for, of what use is it to have a saddle made and adjusted so as to afford comfort and safety of seat to the rider and perfect freedom of motion to the horse, if the horse upon which it is placed be not only under control, but so manageable at all gaits, and under all circumstances that the will of the rider is conveyed to and enforced upon him without effort.

The subject of proper bitting is secondary in importance to no other with which the cavalryman has to deal in considering the question how to obtain not only the greatest amount of work from the animal upon which are based his hopes of success, but to obtain it in the most direct, effective and satisfactory manner.

Considering the large proportion which the cavalry in our army bears to the other arms, the constant field service it has been engaged in for the quarter of a century since the close of the war, the practical minds of our officers, the inventive genius so often displayed, and the improvements which have been brought about by this combination of qualities, it seems strange that with what is, in other respects, the lightest and best horse equipment ever devised for cavalry service, we should allow our best efforts towards the attainment of perfection in mounted service to be paralyzed by the employment of a bit like that now in use. I use the word allow advisedly, for I am satisfied that when our cavalry officers decide upon a bit which will answer their purpose better than the present one, furnished upon the recommendation of a board of officers, the Ordnance Department will endeavor to supply it.

If this subject of devising a proper bit for our horses has ever received the serious attention of any officer or class of officers who had prepared themselves for the investigation of the subject by a proper study of the question in all its phases, mechanical and anatomical, and with reference to the temperament and conformation of the average American cavalry horse, I am not aware of it.

In the June number of *The United Service Magazine*, 1885, Lieut. S. C. ROBERTSON, 1st Cavalry, published an article on the subject of "Bits and Bitting," which contained many valuable suggestions, but based rather upon the experiments of others than derived from his own experience. The bit, of which he has given an illustration, and which he recommends the adoption of,

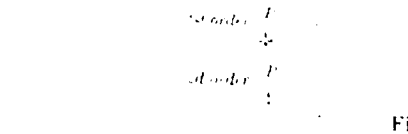

Fig. 9.

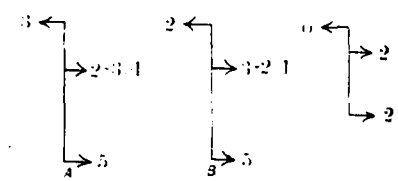

Fig. 10.

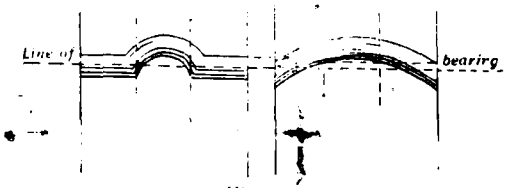

Fig. 11.

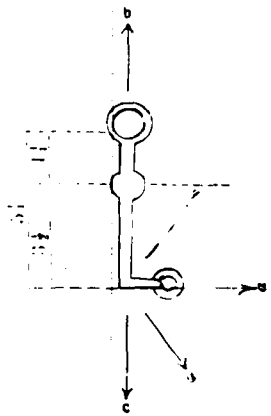

Fig. 13.

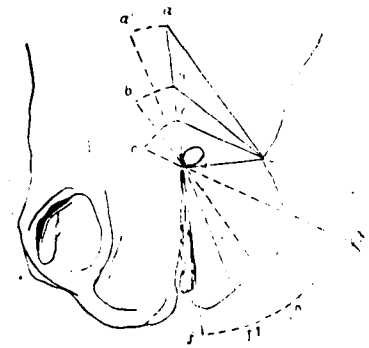

Fig. 12.

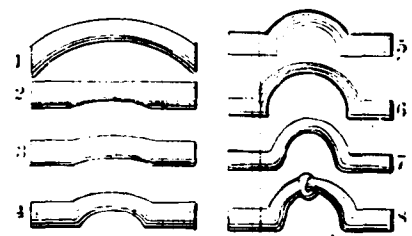

Fig. 14. Various mouth-pieces.

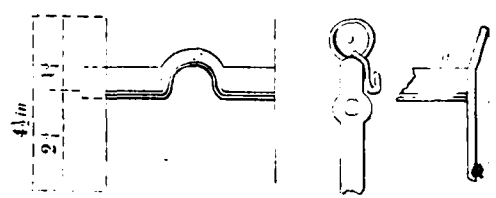

Fig. 15.

as possessing all the good features and none of the objectionable ones of bits heretofore used, would seem to be well worthy of a trial. It will be seen hereafter that this bit has almost precisely the proportions recommended by the authority, whose ideas it is the object of this paper to endorse and publish for the information of all concerned.

For an exhaustive treatise upon the subject of bits and bitting, written by a cavalry officer of great experience and brilliant mind, who has considered the matter from every possible point of view and availed himself of the results of the labors of other investigators in the same field, I wish to commend to the earnest consideration of our cavalry officers the work of the late Major FRANCIS DWYER, of the Austrian Hussars, entitled, "Seats and Saddles; Bits and Bitting."

To those who may read this work for the first time it will appear like a revelation, so startling and novel is the information furnished upon subjects with which most cavalry officers think themselves already well acquainted.

A careful study of this volume will, at least, have the beneficial effect of showing in what a slough of ignorance regarding one of the most essential things connected with our profession, we have been unconsciously wandering, and the knowledge may stimulate us to decide upon some course of action that will land us upon solid ground, from which we may hope to make continued progress in the future.

As it would be mere presumption on my part to attempt to enlarge upon the ideas, or improve upon the language in which they are expressed, I shall ask your permission to quote in its entirety the fourth chapter of Major DWYER's work, in so far as it relates to the curb bit:

With a plain, smooth snaffle, there is no question of lever action; the amount of power applied to the reins is conveyed unaltered in quantity to the animal's mouth; to use a scientific expression, there is none of that mechanical advantage obtained which a mechanical power alone is capable of conferring.

A still greater amount, however, of mechanical advantage may be obtained by means of a lever—and a bit furnished with a curb of a proper length acts as such. There are, we know, several kinds of levers, and it will depend altogether on the manner in which the bit and curb are arranged, whether we obtain a lever-action that is favorable to us or quite the contrary; it is therefore necessary to say a word or two on the principles of lever-action.

In the first order of levers the power is applied at one end, the weight being placed at the other, and the fulcrum or prop between the two, dividing thus the lever into two arms, a longer and a shorter one. The mechanical advantage obtained is proportionate to the relative length of these two arms. Thus: if P F, fig. 9, (a) be equal twice W F, a power equal 1 applied at P will counterbalance a weight equal 2 applied at W; (see p. 162) but, as regards our purpose, it is more especially necessary to observe that the power and the weight move in *opposite* directions, or rotate round the fulcrum or prop, as is shown by the direction of the arrows. Applying this to a bit, the cheeks of which represent the lever, there can be no question as to where the power is applied, being the lower ring to which the rein is attached, nor as to the direction in which it is intended to act, being towards the rider's hand; and if a bit act as a lever of the first order, the fulcrum or prop must be represented by the bars* of the horse's mouth on which the mouth-piece acts, and the pressure of the curb† on the chin would necessarily represent the weight to be raised. But it has been shown that, in levers of the first order, the power and weight move in *opposite* directions in their rotation about the

*Gums.

†We use the word curb for curb-chain, and bit or curbed-bit for what is sometimes called curb.

prop; in this case, therefore, the horse's chin, in consequence of the pressure exercised by the curb, should move forward—that is to say, away from the rider's hand; and the greater the lever power of the bit, and the stronger the pull on the rein, so much the more would the horse be induced to stick out his nose—an occurrence that is by no means infrequent, and at which some riders and drivers are very much astonished.

Now, in fact, there is no *weight to be raised* in the purely mechanical sense of the expression—it is a question of the infliction of a certain amount of pain from which the horse shrinks and if the curb act more *painfully* than the mouth-piece, in consequence of its construction or position, we obtain the action of a lever of the first order, which we should never desire. Some people are indeed regardless of the amount of pain they inflict on a horse, and go on increasing this painful action in both directions, without, of course, *obtaining* any real advantage, which is precisely what we would desire to see put a stop to; and in order to do this let us examine into the action of another kind of lever.

In a lever of the second order the power and prop act, or are placed, at the opposite extremities of the lever, the weight being between the two; the mechanical advantage is proportioned to the relative distances of the power and weight from the prop. For instance, if P F, fig. 9 (b), be equal 3, and W F equal 1, these numbers will express the relative amount of power gained; and it is to be observed that the power and the weight move in the same direction in rotation round the fulcrum. This is what we want for bitting; the weight in this case is represented by the pressure on the bars of the mouth; the curb acting thus merely as a fulcrum, the horse's head follows immediately the pressure on the bar in the direction of the rider's hand.

It is very evident that the direction in which the bit acts depending altogether *on the relative amount of* painful pressure exercised by the bit and curb, the horse's head will follow the rider's hand, even though the curb lacerate his chin, if only a greater amount of torture be applied to the bars of his mouth, the poor animal being left to deduce from the balance of pain what the rider's will may be. This is the system of bitting employed by the Arabs and other Orientals at the present day; our Crusader forefathers borrowed it from theirs, and, strange to say, it is still more or less practiced among us.

It is, however, quite possible to economize for ourselves all this surplus ingenuity in devising instruments of torture, and to spare our horses the infliction of it, merely by adjusting our bits altogether on the principle of a lever of the second order—that is to say, by converting the curb into a simple prop or fulcrum for the lever-action on the bars of the mouth, which may be effected by rendering it perfectly painless, so that then the small amount of pressure exercised on the bars acting in the proper direction, and not being counteracted elsewhere, is the sum total of pain it becomes necessary to inflict, and even this may be reduced to a minimum. The above (fig. 10; see p. 164,) shows that, supposing a power equal to 5 to be applied to the reins, it may in consequence of various arrangements of the mouth-piece and curb, be made to exercise an amount of painful pressure as at A, where three parts act on the curb and only two on the mouth, which will make the horse bore into the hand; or as at B, where three parts act on the mouth and only two on the curb, so that 1 really remains available. Whereas, by reducing the painful action of the curb to O, as at C, we find that the whole amount of action may be applied to the mouth, and therefore itself reduced to two.

Here we have a key to the whole theory and practice of bitting, and there is no difficulty in understanding that its immediate consequence will be to render bits of small dimensions equally efficient and much more certain and reliable in their action than the monstrous pieces of ironmongery usually manufactured and sold ever can be; and now we proceed to enter into further details.

The first question that naturally presents itself is the absolute length of the lever—that is to say, of the upper and lower cheeks of the bit taken together; the next, that of their relative proportions to each other. Before

going into the consideration of these it will be well to clear up one or two preliminary matters, merely premising what is self-evident on inspection, namely, that a bit may be regarded as a pair of levers connected together by the mouth-piece. At first sight this might lead to the conclusion that the centre of the rivet on *each side* is always the *point from* which the length of the upper and lower part is to be measured. This is, however, only true for those forms of mouth-piece which consist of a port and two lateral straight portions; but if the whole mouth-piece forms one curve, the line of bearing—that is to say, the line connecting the two points of the mouth-piece which rest on the bars of the horse's mouth—does not coincide with the axis of the bit passing through the centre of the two rivets, which must be taken into account in estimating the relative lengths of the upper and lower cheeks of the bit. (See fig. 11; page 166.)

The measure for the length of the upper cheek of the bit, taken from the "line of bearing" to the point at which the curb-hook acts, is the height of the bars of the horse's mouth, which, as has been shown in a previous chapter, is pretty nearly a constant quantity—namely, $1\frac{1}{16}$ English inch, decreasing with very small horses and ponies to $1\frac{5}{16}$; therefore, rejecting *too* great nicety, we may say *that* $1\frac{3}{4}$ *inch* is the proper length for the upper cheek—very seldom less, and hardly ever more.

It would be very easy to demonstrate mathematically why these two dimensions should always correspond, but we prefer the simpler and more obvious way of showing what the consequences of a departure from this rule must necessarily be.

If one puts a bit into a horse's mouth *without attaching a curb to it*, when the reins are drawn the bit turns right round, and its cheeks or branches come to lie in the same line as the reins. There is no lever-action whatever, because there is *no prop*, and a *snaffle* or *bridoon* would, *on account of their centre-joint*, be much more efficient. The same thing, too, will happen, if the curb be *very* loose; the bit is then said to "fall through"—in fact, it is merely useless. The opposite fault to "falling through" is when the bit "stands stiff" without any play, the slightest pull on the reins causing the horse great pain, and, most probably, just in the wrong place—that is to say, externally; for this stiffness or rigidity of the bit is very often produced by a *tight* curb, and therefore the horse, instead of following the rider's hand, pokes against it. Good bitting will be equally removed from stiffness and falling through; it lies between these two extremes.

The length of the upper cheek of the bit will, however, *of itself* cause this instrument either to stand stiff or to fall through, if it exceed or come short of the height of the bars of the mouth, as is shown in figure 12, where d e represents this latter dimension, d b an upper cheek precisely equal, d c one of only half the same length, and d a one double the same. When a pull of the rein acts at f on the lower bar, the curb will be drawn closer to the chin, and the mouth-piece to the interior of that organ; and supposing the amount of this "closing up" to be equal in the three instances, the bit with a long upper cheek, d a, will assume the position of a^1 d f^1. It will be *stiff*, and the *curb acting upwards in the direction of* e a^1, will *press on* the sensitive part of the jaw (see p. 168). Moreover, there will be *no* lever-action, the two arms of the lever being equal; the horse will therefore bore in the rider's hand. On the other hand, the bit with the short upper cheek d c, equal half d e, will assume the position c^1 d, f^2—that is, it will *fall through*. The curb will no doubt remain in the chin groove, and act *forwards* in the direction e c^1, but forming a very acute angle with the branches of the bit itself, will have scarcely any value as a *prop*. The lever-action, however, will be very great, the lower branch f d being to the upper one d c in the proportion of four to one. In fact, it will be too great, and therefore reduces the prop to a nullity.

The intermediate upper cheek d b, equal d e, will assume the position b^1 d f^2, it will neither be stiff nor fall through: The curb will remain in the chin-groove, acting obliquely forwards in the line e b^1, and will afford a sufficient prop or support; and the lower branch of the lever, f d, being in the proportion of two to one to the upper one, d b, there will be sufficient lever-action.

It will be now easy to understand how it comes that people, in order to prevent a bit with a very short upper cheek falling through, are driven to using a very tight curb, the result of which is, that the whole action is transplanted from the interior of the mouth to the chin; as also that, in order to prevent one with a very long upper cheek standing stiff, they use a very loose curb which has the effect of making the bit fall through; and this — what is very common, nay, almost invariable in this country — immensely long bit is pulled up as high as it will go into the horse's mouth, and then a loose curb attached, which great piece of ironmongery of course not only falls through, but acts nearly altogether on the exterior of the horse's jaw; whereas a much smaller and lighter bit, if adapted to the mouth, would be much more efficient.

Some portion of the objection to the long upper cheek referred to above — namely, its affording no lever action — may be remedied by making the lower cheek proportionately longer; and this is precisely what the ironmongers do, and, moreover, are encouraged to do by ignorant buyers. As has been already shown above, with reference to fig. 10, we are thereby driven to use much severer — that is, more painful — bits than are really necessary; besides which, there is another reason why we cannot go beyond a certain length with the lower cheek. This is on account of the angle at which the rein acts on the latter.

We have already pointed out how much depends on the angle at which the power is applied to a lever, and that a right-angle is the most favorable one for this purpose, which may be shown in a manner perfectly independent of theory. If the bit, fig. 13, (see p. 170), were pulled in the direction of c, it would evidently have no other effect than to pull it downwards, and out of the horse's mouth, if the head-piece of the bridle did not prevent this taking place; and if the pull were made in the direction b, it would only lift the bit up till the angles of the mouth stopped it. In neither case would there be the slightest lever-action; and the nearer any other direction, g or h, approached these perfectly inoperative ones, b or c, the less would be its value; and it is therefore evident that the direction a, which is equally remote from both, must be most efficient — which is, however, precisely the right angle.

Now a very long lower cheek, or a very long carriage of the horse's head à la Baucher, or a very high pack in the front of the saddle, will always have the effect of bringing the rein to act on the bit at an unfavorable angle; and when we come to look at the bits that served as models for old equestrian statues, we find that the immense long lower cheeks of these were bent backwards so as to form an angle with the upper cheeks for the purpose of securing the action of the rein at a right-angle, or nearly so — which, however, did not and could not answer the purpose intended. If the inventors of these frightful bits had had any knowledge of the laws of mechanics, and the application of lever-power, they would have found that the same amount of useful action would have been much more certainly obtained by a much shorter lower cheek, without incurring the very serious disadvantage of lifting the bit, as it were, in the mouth, which always must have the effect of causing the curb to mount up out of the chin-groove, and therefore produce conflicting impressions, tending to neutralize one another and puzzle the horse. Moreover, the longer the lower cheek the greater will be the space through which the rider's hand has to move in order to produce a given amount of action. It will be therefore slower, although more powerful, and consequently more unequal, rendering it very difficult for the majority of riders to hit off exactly the precise amount of pull required.

Having thus arrived at the conclusion that the absolute length of the lower cheek should be diminished as much as possible, and also laid it down as a rule that a length of 1¼ inch is in all cases sufficient for that of the upper one, it is not difficult to ascertain what the relative proportions of the two should be, which would, of course, give us the absolute length of the former. And here we encounter the only useful general rule that bit-makers in general seem to be acquainted with, namely, that *the lower cheek should be twice as long as the upper one*, which, increasing the lever-action in the proportion of three to

one, should be under all circumstances ample. But the bit-makers, although adhering to this proportion, but too frequently make the lower cheek inordinately long, because they have no standard of length for the upper one; whereas, if we adhere to the rule laid down above of 1¼ inch for the latter dimension, we have 3½ inches for the former one, both measured from the line of bearing (see fig. 11,) and 5¼ inches for the entire length of the bit measured from the point at which the curb-hook acts above to that where the lower ring acts below. (See fig. 13). This will be the maximum required, and will be found to suffice in all cases; with very small horses or large ponies the upper cheek will have to be reduced to 1¼ inch, the lower one to 3 inches, leaving the total equal to 4½ inches, which will be about the minimum.

Some authorities, among them Von Weyrother, recommended the measured width of the mouth to be taken as a rule for the length of the lower cheek; this varies as we have already shown, from 3 $\frac{9}{10}$, 4¼ to 5 $\frac{1}{10}$ inches, and would be, therefore, somewhat more than the rule given above; but Von Oeynhausen adheres to this latter, and we are convinced that he is perfectly justified in so doing, because we have it in our power, by means of the mouth-piece, to effect the nicest adjustment that can be desired, and there is a much better chance of having the proper proportions adhered to by the bit-makers if we give them *one* or *two* fixed quantities, instead of a number of variable ones.

Next to the dimensions of the cheeks of the bits, the most important point to be considered is the curb; or rather, the position of the bit in the horse's mouth, taken in conjunction with the line of the curb, is what determines in the first instance height of the upper cheek, and consequently that of the lower one. *The curb must lie in the curb-groove, without any tendency to mount up out of it on the sharp* bones of the lower jaw, otherwise, as we have seen, it ceases to be a painless fulcrum, and renders the best constructed bit uncertain, or even still worse, in its actions. (See fig. 11.)

The only certain way of obtaining this perfect painlessness of the curb, on which so much depends, is — supposing, of course, this latter to be properly constructed and of the requisite dimensions — *by placing the mouth-piece on that part of the bars exactly opposite to the chin groove*; it is only in this position that we have the right-angled-triangle, c, d, b, shown in figure 12. But there is another reason for this. We find here the portion of the bar of the horse's mouth best suited for the action of the mouth-piece — that space that intervenes between the grinders and the tusks, where these exist. With respect to the latter, it is necessary to mention that there is great irregularity as to their position in the mouth, some horses having them relatively higher, others lower; nor do the tusks of the upper jaw always correspond with those of the lower one, and mares have very frequently no tusks whatever; it is therefore quite impossible to determine the proper place for the mouth-piece with reference to these teeth, although even the cavalry regulations continue to do so. The chin groove, in consequence of its relation to the action of the curb, is the essential point to be considered.

Almost all the defects and absurdities of bits and bitting may be traced to ignorance of, or inattention to, this very simple rule. A man puts a bit in his horse's mouth — let us suppose that it is a well proportioned one in every respect; he fixes it at the prescribed "inch above the lower tusk" if he be a soldier, or draws it up into the angle of the lips if he be a civilian; he may just happen to hit off the right place, and if so even an ill-shaped bit will work tolerably; he is content with his work and thinks he has mastered the difficulty. But in ninety-nine cases out of a hundred the mouth-piece lies higher than it should, and if, in addition to this, the upper cheek of the bit be, as it so frequently is, a quarter of an inch too long, then the curb mounts up out of the chin-groove and causes so much pain that the horse, to escape it, bores into the rider's hand. He will then, perhaps, try a longer curb or a shorter one; the bit will either fall through or be stiff, and he concludes that

he must have a sharper one, and has recourse to some instrument of torture; and so it goes on from bad to worse till he gets rid of the poor ill-used animal.*

The best fitting bit, even when placed in the proper place, will not work well unless the curb be properly constructed and exactly of the length required. Taken, all-in-all, a double chain worked quite flat, without prominent edges, and which *when twisted up* to its full extent, *does not overtwist*, is the best kind of curb. Leather would be in some respects better than a chain; it is, however, not only perishable, but also subject to stretch or contract when exposed to moisture; and after having been once or twice thoroughly soaked, becoming hard and inflexible, it is more likely to injure the horse's chin than a well-made chain.

It is very clear that the narrower the chain is made the more likely it is to cause pain, which is just what we want to avoid, and we should therefore endeavor to make it as broad as possible. The vulgar notion of a sharp curb is, as the reader perceives, a monstrous absurdity. But there is a limit to this: if it be so broad as to fill up the chin-grove completely, there will be always a danger of its upper edge coming in contact with the sharp cheek-bones at every, even the slightest, pull on the reins, and getting up a sore which immediately interferes with the action of the bit; we must therefore select a curb that *does not altogether* fill up the groove. It is not easy to give any special dimension for the width of the curb-chain; eight-tenths of an inch will be found to answer the purpose very generally, but if we can use a broader curb without injuring the chin-groove so much the better; it is more likely to be flat and painless. Curbs are frequently made to taper off a little at the ends: there is no objection to this, except that, being more difficult to manufacture with precision they are seldom so well made as the curb that is equally broad throughout. Single-chain curbs made of flat links may be good, if not too broad or sharp-edged; the plain double-chain will be probably better made, and therefore preferable: the great thing is to avoid the infliction of pain, and if we are sometimes compelled to use a very narrow curb, on account of the chin-grove being sharp and narrow, it will be well to have a cloth case to run over it, which may be taken off after use each time.

It is not possible to give an exact dimension in inches for the *length* of the curb; a little reflection will show that it must always bear some special proportion to the width of the horse's mouth and the height of the bars, the latter of these quantities being nearly constant, whilst the former one is variable, as has been shown above. We must here anticipate, to a certain extent, the contents of the next paragraph. In order to render the action of the curb as painless as possible, it is absolutely necessary that it should press upon the greatest extent of surface that can be made available for the purpose, for which reason, of course, we require this instrument itself to be flat, and as broad as the chin-groove will allow. If the mouth-piece have exactly the same width as the mouth, the curb will wrap close around the chin, pressing equally over a large surface; but if, on the contrary, it be too wide, the curb will trend away right and left; and if the excess of width amount to half an inch or an inch, it will bear altogether on one spot and get up a sore,† although it is really larger than it should be.

It will be found that the proper length of the curb is about one-fourth more than the width of the mouth, the curb-hooks not being included in this; or, if we take these into account, the total of the curb and the two hooks will be once and a half the same dimensions.

*This is no imaginary case: The author once saw a nice little thoroughbred horse at Ostend, and a few months later at Dublin, as second charger of a light cavalry officer of the garrison. He was set down as an incurable bolter, and passing through the hands of the riding master, adjutant and several officers, was finally sold, as dangerous to ride, for £15, at a fifth-rate auction mart. The purchaser, a ladies' doctor, brought it to the author, who, after curing its dreadfully lacerated mouth and jaws, bitted it properly with a very light bit, which enabled the doctor to ride it within a week at a review of the regiment in question and for several years afterwards, without ever bolting or being troublesome: never was there a better tempered creature.

†The author once found some thirty or forty horses in one squadron each with a little round ulcer on the chin in consequence of the bits being too wide.

The curb-hooks form an important item in the arrangement. It was formerly the custom to have one hook attached permanently at the near side of the bit, and another of a somewhat different form to the off side of the curb, but it has now become usual to attach a pair of hooks of exactly the same shape and dimensions, which is a great improvement; the proper length for these is *three-fourths the height of the upper cheek, or about one and one-fourth inch.*

The above length of curb applies to what is really employed between the two hooks, but it is usual to have one reserve link at the off side, and two of these at the near one, which latter are convenient, or rather indispensable, for catching a proper hold of the curb when being hooked on.

We now have gone step by step through the several details connected with the bit considered as a lever—namely, its cheeks, and the curb with its hooks, which represent the fulcrum or prop. There remains the mouth-piece, which is of equal, if not greater, importance, as a part of the instrument through which the immediate impression is made on the mouth, and therefore generally placed in the foreground by writers on this subject. It appeared, however, to us to be a matter of great importance to make it perfectly clear, in the first place, that the entire action of the bit should be concentrated on the mouth-piece, that *the operation of the curb should be confined wholly to the* function of a painless fulcrum, and that there are certain narrow limits to the size of the upper and lower bars which form the cheeks of the instrument. The form and proportions of the mouth-piece must be deduced wholly from the interior conformation of that part of the mouth on which it is intended to act, and these are, the tongue in the center and the bars of the mouth on each side. It has been already pointed out that the relative hardness or softness of the mouth, so far as this depends on the conformation of this organ itself is a consequence of the greater or less thickness of the tongue, and the greater or less sharpness and sensitiveness of the bars. The soft, fleshy tongue is, of course, much less sensitive to the pressure than the bony bars, covered only with a very thin membrane; and consequently, if we used a perfectly straight unjointed mouth-piece of a moderate thickness, this resting wholly on the animal's tongue would, notwithstanding a certain amount of lever-action, be the very lightest form of bit that could be well devised; in fact, a good snaffle would, on account of the joint, be more powerful. On the other hand, if by means of what is called a "port" we remove all pressure from the tongue and transfer it to the peculiarly sensitive bars, we obtain, with precisely the same amount of lever-action as before, a much greater amount of power—in fact, the sharpest form of bit that it is generally advisable to use. Now between these two extremes there is a wide range, and the whole art of bitting consists, so far as the mouth-piece goes, in determining how much of the pressure shall fall on the tongue and how much on the bars, and we are thus enabled, by means of an almost infinite system of gradations, to obtain exactly the degree of action required in each particular instance by the nature of the service we demand, whatever the relative thickness of the tongue and sensitiveness of the bars may chance to be.

But there is one essential to be attended to—namely, that the portion of the mouth-piece destined to rest on the tongue and the bars respectively should keep their proper places, and this can be secured only *by making the mouth-piece of precisely the same width as the horse's mouth.* For it is very evident that if a mouth-piece furnished with a port be too wide, a very slight pull on one rein will suffice to displace it, so that the bar at that side gets either altogether under the port, in which case the whole pressure is thrown on the tongue; or partially so, when the corner of the port will, by being pressed into it, cause great pain—in fact, the action of the mouth-piece, whether with or without a port, becomes altogether irregular and cannot be depended on. On the other hand, if the mouth-piece be too narrow, the lips are jammed in over the bars, the mouth-piece rests more or less on them, and the whole action is disturbed, besides which the horse is sure, sooner or later, to get ulcerated lips

The first grand rule must be, therefore, in all cases to make the mouth-piece

precisely so wide that, when placed in the mouth, it fits close to the outer surface of the lips without either pressing on these or being subject to be displaced laterally.

But it is also evident that the different parts of the mouth-piece must be exactly fitted to the interior of the mouth; that is to say, that those portions destined to act on the bars of the lower jaw should come into contact with them, and with them alone and in the degree required; and that, on the other hand, that portion destined to act on the tongue should be of exactly the proper dimensions and form. Of course there is a great difference in this respect between smooth mouth-pieces and such as have a port; in fact, it is only as regards the latter that the dimensions are important. Where, then, a port exists, its *width* should be exactly that of the tongue channel, as otherwise it would either intrench on the space allotted to that portion of the mouth-piece required for the bars, and produce the inconveniences alluded to above; or, if narrowed, it would fail to answer the purpose for which it is intended: namely, to admit the tongue.† *The width of the port must be, therefore, exactly that of the tongue-channel*—and this is the second grand rule as regards the mouth-piece. Now it has been already shown that the width of the tongue-channel is very constantly three-fourths of the height of the bars, which, being equally constantly $1\frac{1}{16}$ inch, we have $1\frac{1}{4}$ inch for the maximum width of the port, even in cases when the total width of the mouth, and consequently of the mouth piece, amounts to $4\frac{1}{2}$ and $5\frac{1}{16}$ English inches; for pony and hack bits, about one inch will suffice; whereas the common practice of the bit-makers seems to be to make it one-third of the total width in all cases.

For the height of the port, of course, no rule can be given, this being precisely the most variable dimension of all, and depending altogether, so far as the interior conformation of the mouth is concerned, on the relative thickness of the tongue and sensitiveness of the bars; and *further*, as we have already shown, on the temperament and general conformation of the animal; finally, too, on the description of service to which it is to be applied; to which must, in some cases, be added the peculiar style of riding or driving of the individual that uses it; for nothing can be more certain than that the best bitting in the world is wholly useless, nay, sometimes dangerous, in bad, that is to say, heavy or rude hands.

Figure 14 (page 181) shows a succession of mouth-pieces of the forms now generally adopted, beginning with the lightest—that is to say, the one whose pressure is almost entirely exercised on the tongue—and proceeding onwards with an increase of port or "tongue freedom" to the very sharpest it is advisable or can ever be necessary to use, namely, to one in which the height of the port is equal to its width, say $1\frac{1}{4}$ inch; and beyond that it is impossible to go, because the slightest pull on the rein would, by altering the position of the lever, bring the top of the port to press against the palate, causing more or less pain, and therefore inducing the horse to bore with its head in the contrary direction to the pressure—that is, away from the rider's hand.

A mere inspection of these figures shows that the thickness of the iron or steel is an important item; the diameter of the straight portion of the mouth-piece may vary from a half to three-quarters of an inch; and as it is scarcely necessary to point out that the greater the diameter the less painful will be its action on the bars of the mouth. When under half an inch it pinches to a certain extent, and should therefore be only employed when one is quite certain that this is desirable. In figure 14 we have made the width of the port exactly $1\frac{1}{4}$ inch, and that of the whole mouth-piece being only four, which would be rather under the mark. The thickness of the mouth-pieces, Nos. 1, 2, 3, 4, is three-quarters of an inch, and these range from what is considered to be the very lightest form, No. 1, up to No. 4, which represents a medium bit. We, however, *should always prefer No. 2 or No. 3 to No. 1*, for the arched form of the latter throws nearly the whole pressure on the tongue, and the very small amount that falls on the bars of the mouth does so *laterally*, and not from front to rear. This form of mouth-piece, too, is always unsteady, and we have seen many horses whose tongues have been nearly cut through by its use with a tight curb. The mouth-pieces, Nos. 5, 6 and 7, are only half an inch thick, which renders their action on the bars of the mouth more telling; they represent sharp bits. It will not escape observation that a greater thickness of the mouth-piece adds, in fact, to the height of the port; it is like placing an arch on higher buttresses, but it renders the action on the bars less painful, and enables us to meet the exigencies of special cases, as, for instance, where a horse has a thick, fleshy tongue and very sensitive bars, and would not bear anything like sharp bitting.

*See note at foot of page 137.

†The Germans call the port of a bit the "tongue freedom"—Zungenfreiheit—which expresses exactly the purpose for which it is intended.

There is another adjustment that may be occasionally employed with advantage, and which naturally finds its place here. The plane of the port is usually made to coincide with that of the whole bit; in other words, if we look at the instrument from either side, the port will be covered by the upper bars; but it is easy to perceive that, by inclining it a little forward, we may increase the tongue freedom without making the port itself higher; this, however, can only be resorted to with a port of very moderate height; otherwise the roof of the palate would be endangered by every pull on the rein.

We have hitherto treated the lower cheek of the bit as a straight line, and this is the form *usually adopted in common life*; whilst for military purposes various curves are adopted, the best and nicest looking being nearly in the shape of a capital "S." This variety of form, it should be understood, has nothing to do with the action of the bit as a lever; the point of attachment of the lower ring, the centre of the rivet of the mouth-piece, and that of the upper ring or eye, should be in one straight line, and at the same proportional distances from each other, in both cases alike. The real object of the double curve of the lower cheek of the military bit is to prevent the horse from catching hold of it with his lips, and then getting it between his teeth, a trick many horses acquire. With the straight cheek recourse is had to a curb strap in such cases, as every one knows; but it is much simpler and easier for military purposes to adopt the curved cheek, and there is no other reason beyond whim and fashion why civilians should not do the same.

As to the upper ring or eye into which the headstall of the bridle is fastened, this is now pretty nearly always really ringshaped. In former times it was usually flattened down in various degrees from an oval to a mere horizontal slit; but since the real principles of bitting have become better understood, the simple ring is preferred, and will be generally found to answer all purposes perfectly, although, no doubt, there are some cases where it might be convenient to use the oval-shaped eye; these are, however, very few indeed. We have also hitherto considered the right and left side-pieces (upper and lower cheeks taken together) of the bit as being in all cases parallel to each other, and consequently at right-angles to the mouth-piece. There are, however, many horses, especially underbred ones, whose heads will be found to project laterally, immediately above the angles of the mouth, in a sudden instead of the usual gradual manner; and the width of the mouth-piece is therefore insufficient to give the upper cheeks, especially the rings, the requisite degree of play, or rather, the latter will most probably gall the horse's cheeks more or less. There are two ways in which this may be readily avoided; first, by inclining the upper cheek somewhat outwards, (Fig. 15 a), or by making the upper ring movable (Fig. 15, b), instead of its forming a continuation of the upper cheek. Either of these methods will be found to answer the desired end, without interfering with the proper action of the bit, and are not only unobjectionable, but should be always resorted to when necessary, because nothing is more common than to see unthinking riders reject a bit whose mouth-piece has the proper dimensions, and adopt one that is a quarter or half an inch too wide, simply because they find that the upper bars do not fit *the outside* of the horse's head; in fact, this is what frequently leads to a wrong selection of bits. People think of the outside and visible part, and neglect altogether the much more important interior of the mouth and the mouth-piece.

It may be useful to summarize here the whole of what has been explained in detail in the preceding pages. We may say, then, that the average height

of the bar of the horse's mouth being one and three-fourth inch, the upper cheek of the bit need never be longer, except, perhaps, in very rare instances of horses eighteen hands high and upwards; and this gives us three and one-half inches for the lower one, and for both a total of five and one-fourth inches, measured from where the curb-hook rests in the upper ring to where the lower ring plays in its socket. For ponies or small hacks these dimensions must be reduced to one and one-half inch upper cheek, three inches lower one, and total length of bit four and one-half inches. These are the only fixed dimensions that can be safely given; the remaining equally important ones are variable, and must be ascertained by measurement in the way to be presently pointed out.

Let us now suppose that we have ascertained the exact width of the horse's mouth, and also the proper form of the mouth-piece; we then have the length of the curb without hooks equal *once and a quarter* the width of the horse's mouth, and the curb-hooks equal in length three-fourths upper cheek of bit, which will bring the total length of curb *and* hooks up to *once and a half* the same dimension; and it only remains to put the bit and bridle in their proper places.

We have already shown how much depends on the bit being placed accurately. A quarter or even an eighth of an inch higher or lower makes all the difference in the world. The head-stall or cheek-pieces of the bridle must therefore afford all the necessary facilities in the way of buckles and straps for this purpose. Military bridles and harness have nearly always two pairs of these — that is, one pair by means of which the bit is attached to the cheek-piece of the bridle by its upper rings, and a second in the cheek-pieces themselves, for the purpose of regulating their length; and both pairs may be employed to determine the height at which the bit is suspended in the horse's mouth. There is a great inconvenience and disadvantage in having a multiplicity of buckles, and many civilian bridles — if we may use the word — omit altogether the first-named pair, the cheek-pieces being then sewed directly into the upper rings of the bit. This we hold to be a great mistake, because, first of all, the bit, supposing it to be of the proper size and shape, cannot be so easily fixed in its proper place; and, secondly, it is impossible to change it for one that does fit accurately, in the contrary case. In fact, this practice is evidently a consequence of want of clear views on the subject of bitting, and, on the other hand, a great obstacle to the attainment of the necessary accuracy. We hold the lower pair of buckles and straps to be indispensable. The upper pair of buckles might be more easily dispensed with if one single buckle were placed on top of the horse's head, between its ears; for by means of this the total length of the cheek-pieces may be regulated *generally*, and the *final* adjustment of the position of the bit accomplished by means of the buckles and straps which latter should be pierced with holes at intervals of half an inch.† Some people will, however, prefer the buckles in the cheek-pieces; and if so it will be necessary to see that they do not lie higher than the angle of the horse's eye, as they are otherwise likely to interfere with the position of the forehead band, which should, like every other part of the bridle, including the throat-band, fit loosely, and cause the least possible amount of discomfort to the horse consistent with the object to be attained.

We may now wind up this chapter with the rules for placing the bit in the horse's mouth. When the headstall has been adapted generally to the animal's head by means of the upper buckle or buckles, the next step will be to adjust the bit by means of the lower ones, so that the mouth-piece shall come to rest on the bars of the mouth *exactly* opposite the chin-groove, unless, indeed, some irregular disposition of the tusks should render this impossible, in which case it must be moved *only just so much higher* as is absolutely necessary to clear the obstacle. The curb may be then hooked in, first, of course, at the

*We are told that the gentlemen adopt the latter method and the farmers the former not having so many bridles, and changing their mouth-pieces more frequently.

†It may sometimes be necessary to let the bit down or take it up by a smaller quantity than the half-inch affords; in such cases intermediate holes may be made, but the fewer of these the better, as they weaken the strap.

off side, leaving *one* reserve link, and then at the near side, leaving *two* such, and taking care that it lies quite flat in the chin-groove, without any (even the slightest) tendency to *mount* upwards when the reins are drawn. The curb should never be quite tight; there should always be room for the first *and* second fingers of the right hand to pass flat between it and the chin; and by gently pulling the reins with the left hand whilst the two fingers of the right are in this position, it may be easy to ascertain whether any pinching action occurs, in which case there is sure to be something wrong.

As to the measure of the proper length of the curb, we have already stated it *generally*; but each individual case will require a separate adjustment, and if the links be either very large or very small, it will sometimes occur that the difference of one of these will make the curb either too tight or too loose; we must then, of course, try another curb. If the bit is rigid or stands stiff on the reins being drawn gently, the curb will be too short; and on the pressure being increased, the horse will almost certainly either turn his mouth askew to avoid the griping action of the mouth-piece, or rear back suddenly to escape it altogether; we therefore give him another link, and drawing the reins gently as before, we observe whether, after the lower bar has moved through an angle of about eight degrees — bring the mouth-piece just to meet, as it were, the interior of the mouth, — the horse *gives* his head gently and gradually in the direction of your hand as it increases the pressure, without either poking his nose or shrinking back. If this be the case you are all right; but if the lower bar moves through a much greater angle than the above — say fifteen to twenty degrees — before the horse yields perceptibly, then your curb will probably be too long.

We say probably, because you may, after shortening and lengthening the curb once or twice, find that the horse will avoid the bit in the first case or remain insensible to it in the second — in fact, you discover that the mouth-piece is unsuited; therefore, in adjusting the length of the curb, you must take care to avoid drawing your conclusions too hastily. When you come to a hitch of this kind, lift up the horse's upper lip gently with your left thumb so as to get a view of the interior of his mouth, whilst you draw the reins with the right hand so as to see how the mouth-piece lies, whether too much or too little of its pressure falls on the tongue — in fact, whether the mouth-piece is not in fault; but this requires some experience, and perhaps the help of an instrument, of which we shall have to speak in the next chapter.

To conclude, *lightness, accuracy, easy motion, a total absence of stiffness, constraint, or painful action, are the characteristics of good bitting; and if these be attained, ready obedience to the rider's hand and heel will be the result.*

Admitting the soundness of the views expressed in the foregoing, and I can see no reason for declining to do so, we are now prepared to show how the Shoemaker bit supplied to our cavalry fails to fulfil the conditions demanded in a suitable bit in the following respects:

First. — Its weight, which, being 17 ounces, is excessive and unnecessary for strength or power.

Second. — The proportions between the upper and lower branches. These are the same in *all* bits, and are, for the upper, 1.75 inches from middle of slot to center of mouth-piece; and for the lower 5.1 inches from center of mouth-piece to end of lower branch; that is, the lower branch is nearly three times, instead of twice, the length of the upper. A dangerous excess of leverage.

Third. — In its action, combined with the position of the curb-strap, it is virtually a lever of the first order, and all power applied tends to force the horse's head away from the rider instead of bringing it under control.

Fourth. — The width of the curb-strap safe — 1¼ inches — being decidedly above the width of the average chin-groove, it must, at every pull on the reins,

rise above the chin-groove and exert a painful pressure on the sensitive bones of the lower jaw.

Fifth.—The slot in which the curb-strap is fastened being vertical and admitting of no play of the strap, has a tendency to keep the curb-strap almost at right angles to the branches of the bit when the latter hangs naturally, so that it cannot be made to drop into the chin-groove or embrace the jaw equally at all points. It is impossible to make it hang or lie so as to act upon the jaw in the proper direction or without pain. This fault is enormously increased, when, as frequently occurs, a horse is supplied with a bit from three-fourths of an inch to an inch too wide for his mouth. An examination of the horses at this post would show the existence of a number having the little ulcers or callosities on the chin, mentioned by Major DWYER, as the results of the improper action of the curb upon the jaw.

Sixth.—The mouth-pieces of all our bits have the same diameters and the same lengths, the former being .6 of an inch, the latter 4.75 inches, and horses with low, broad, fleshy gums, are subjected to precisely the same kind of pressure as those possessing exactly the opposite characteristics, and there is no possibility of remedying the defect. The only thing to be said in their favor is that they are all of the mild type, so far as the mouth-pieces are concerned. The excessive length of mouth-piece, in the case of many horses, allows a play from side to side of almost an inch, and the effect of this can be readily understood. Extra power, accidentally or intentionally applied to one rein, draws the mouth-piece to that side, the port is displaced, and the point where the arch or port rises from the mouth-piece, although smoothly finished, frequently presses the tongue with force enough to lacerate it, and, in some cases witnessed by myself, cut the tongue almost in two. The perfect mouth-piece is one having a thickness suited to the nature of the horse's gums, or bars, as DWYER calls them, a port which allows the tongue to move freely under it, while the sides of the mouth-piece rest equally and painlessly upon the parts of the jaw where the power is to be applied. For bits to have mouth-pieces all of one size is as absurd as to have the shoes of the horses or the garments of the different troopers all of the same size. To be of any service they must *fit* comfortably and correctly.

Seventh.—The port in Nos. 1 and 2 is not too high, speaking in general terms, but that in No. 3, 1½ inches, exceeds the limit that should be allowed. A port of that height can be made only to torture a horse and make him bolt, not bring him under control. Owing to the erroneous ideas that prevail in regard to the use of the curb bit, its severity or mildness has generally been considered entirely dependent upon the height of the port; the thickness or thinness of the mouth-piece not entering into the consideration. It is probable that for most of our horses the port of from one-half to one inch in height would be found suitable, provided the bit were correctly proportioned, and the curb-strap kept in its proper place. With the present bit and curb it is not an unusual thing to see a trooper riding a horse which, in order to get the required freedom for his tongue, pinched between the mouthpiece and the binding curb-strap, has thrown it over the mouth-piece only to be fretted until nearly frantic, but unable to get it back to its appropriate place because of the power applied by his rider who, unconscious of the pain he is producing, and actuated only by a laudable desire to get his horse's head down, increases the painful effect to the point of torture.

Within the last month I have had occasion to put curb-bits, for the first time, into the mouths of some twenty-five horses of my own troop. Every expedient known, or that could be devised, to make them fit properly and act with due effect without producing pain with its attendant annoyances, has been tried, but I regret to say that the attempt has not proved successful. Curb-straps have been lengthened by making additional holes, the bits have been placed higher or lower as circumstances seemed to demand, but nothing has yet been discovered that will prevent the curb-strap rising above the place where it should lie in order to produce the desired effect.

An examination of the cavalry troops at this post would show that so dangerous is this curb-strap when in its normal position that many of the troopers are obliged to remove the strap from the slot and either fasten it loosely around the bar which contains the slot, or on the rear part of the ring of the upper branch of the bit, so that some power may be applied to the reins without forcing the horse to bolt or rear and fall over backwards to escape from the pain inflicted upon him. These temporary expedients for averting trouble have the bad effect of making the bit at all times uncertain and unsteady as regards both horse and rider.

If the bar containing the slot for the curb-strap were widened so that the slot could be made longer and inclined from rear to front so as to give the curb-strap a downward and backward slope, the evils complained of might be remedied to a certain extent, but as this is only one of many equally grave objections, it would be better, I think, to make a bit of an entirely different pattern.

I have had three or four bits made according to Major DWYER's specifications and have tried them with the most gratifying results. So far as I am able to judge from the limited experience already had with them, I am of the opinion that the use of bits of the pattern suggested by him would work a surprising and gratifying reform in the handling of our horses under all the conditions of peace and war.

A bit of the kind suggested, if well made of good material, need not weigh more than twelve ounces, or less, while the Shoemaker weighs about seventeen and the old McClellan about twenty-five ounces. The lever and bit should be sufficiently heavy and strong to enable a rider to control any horse that can be governed by a bit or that is fit for the service. If a horse can be managed, or rather held in subjection, only by the application of torture continuously applied, he can be made more useful in some other sphere of life or laid to rest in the boneyard; the cavalry service is no place for him. It is hardly necessary to observe that with proper bits and skilful application of them, the horses now to be found in this category would rapidly disappear; the rearing, plunging, bolting and restiveness now displayed at almost every drill or ceremony where *all* the horses are present, might become a thing of the past, and the trooper, controlling his horse easily, with comfort to himself, the master of a steed proud to yield prompt and cheerful obedience to the slightest manifestation of his rider's will, because of its being exerted in a painless way, might indeed feel that fortune was his mistress and destiny his slave.

EXTRACTS.

JOURNAL OF THE UNITED SERVICE INSTITUTION OF INDIA, No. 70.

Swimming of Rivers by Cavalry.

It is not possible for large bodies of cavalry soldiers fully dressed, equipped and armed to swim across rivers. In these days, when so much is expected from cavalry in the way of distant reconnoissances and raids, it is necessary, in order that the troops of this arm should not be checked by any insignificant stream of water, that they should be practised in swimming their horses across rivers and transporting their clothing, arms and saddlery by boats, or by other means that can be improvised on the spot.

There are two methods for swimming horses across rivers; one is for each man to accompany and guide his own horse; the other is for a few men to guide the leading horses and for the remaining horses to follow by themselves in a drove. In both cases arrangements must be made on the spot for transferring all clothing, arms and saddlery (if the latter be not left on the horses) from one bank to the other without their getting wet.

It is necessary to select the most suitable places for entering and leaving the water. Banks and a muddy ground are bad; a shelving shore and a firm bottom are good. When possible local enquiries should be made regarding the existence of quicksands, but if this cannot be done an examination of the shallow parts of the river bed should be made by one or two selected men before any large number attempt the crossing.

The number of men to enter the water at one time must depend on the extent of suitable ground available for entering and leaving it. Until men and horses have been well trained in swimming together it is advisable, in order to avoid accidents, that the crossing should be carried out by half troops, and only under very favorable conditions by troops.

To guard against accidents a boat, if procurable, should be moored in the center of the stream and a few selected swimmers should be held in readiness to furnish any assistance required

These men should be furnished with sharp knives in order to cut at once any reins, &c., that might get entangled.

The men to cross the river must undress, and, if ordered to do so, unsaddle their horses. The manner in which the clothing, &c., should be conveyed across the river will be explained hereafter. The bit should be removed, as the snaffle only must be used after the horse enters the water. The bridle must be carefully put on, so as to prevent the horse getting rid of it; the throat lash must not be too tight, and to prevent the reins from getting entangled it is advisable to fasten them to the mane.

The men enter the water naked on their bare-backed horses. The officers keep their proper places, and an interval of six yards is left between the front and rear ranks, and a distance of three yards between the horses. When the horse loses his footing and begins to swim, the rider must lighten his weight on the horse, and should do so by extending himself horizontally in the water, keeping a firm hold of the mane at the lower end near the withers and retaining the reins in his hand at the same time. In this position the soldier must swim with his legs and endeavour to get on the down stream side of the horse. He must press as little as possible on his horse, so that the animal may not have to support his weight, but simply to drag him along on the surface of the water. He must retain his hold on the mane and reins with one hand as above explained, and with the other should throw water in the horse's face should the horse endeavour to turn round towards the place from which he started, which not unfrequently happens. It is advisable for the soldier to get on the down stream side of the horse in order to guide him more conveniently and prevent him following the direction of the current. It also saves the soldier from being dragged under the horse by the force of the rushing water. On entering the river the horse should be guided slightly up stream, so as to prevent a too rapid start, and if he refuses to go on, is frightened and rears, then on no account should the reins be pulled or the horse shouted at; every effort should be made to encourage and tranquillise him by talking quietly to and making much of him.

* See in Count Tolstoi's "War and Peace" an account of the disastrous attempt of a regiment of Polish Lancers to swim the Niemen.

It is a good plan to accustom the men to leave hold of the mane in order to seize the tail, which is necessary if the horse sinks very deeply in the water. It is also advisable to accustom them to leave their own horse occasionally, in order to seize hold of the mane or tail of a horse near them, under the supposition that their own is drowned. Whilst men and horses are learning to swim together, and until they acquire confidence, it will be as well to arrange for the best swimmers amongst the horses to lead, and for the best swimmers amongst the men to be placed down stream.

When sufficient boats or rafts for the conveyance of the men are available, the other method of swimming horses, namely in a drove, may be resorted to.

The bulk of the men, with the saddlery, are first taken across in boats or on rafts. Then the horses which have been left with the snaffle bit only should be driven in a herd into the river. Some good swimmers on horses which also swim well should lead, and it will be found that the horses will enter the water and swim more willingly when free than when they are accompanied by their riders. As the animals land on the further bank they are taken charge of by the soldiers and resaddled.

The construction of rafts for the conveyance of the men's clothing and the saddlery is only necessary when boats of sufficient capacity are not available. In the construction of rafts, an officer's ingenuity will be brought into play. The common village charpoys form a good superstructure, which can be supported on small dug-outs, or earthen ghurrahs, the mouths being covered with any common cloth to prevent water being splashed in, on mussacks, or on kerosine tins, which in some villages in India and Burma will be found in large numbers.

If it be impossible to obtain materials on the spot for the construction of a raft, then the river should be crossed in the following manner: Some good swimmers cross first of all to the opposite bank, one of them taking with him a coil of thin rope, the end of which is fastened to a tree or boulder before he starts. This rope is used to establish a means of communication between the two banks. The men then make their clothing, accoutrements and arms into as compact a bundle as possible, which they fasten on the head or high on the shoulders as best they can; they then enter the water one by one, drag themselves by their hands along the rope and swim at the same time with their feet. Good swimmers should be told off to accompany men who swim badly so as to guard against accidents. This manner of crossing takes a long time, but it may be hastened by stretching several cords across parallel to one another. After the men of the first troop or squadron (with the exception of those required to accompany the leading horses) have reunited on the further side, their horses, fully saddled, should be sent across in a herd in the manner already described. It is necessary that careful precautions be taken to fasten all straps, reins, &c., so as to prevent the horses impeding one another when swimming side by side. The girths should be slightly loosened, the stirrups slipped up on the leathers, the bits removed from the horses' mouths and the rein fastened to the mane. The men leading the herd should be furnished with sharp knives, and be ready to cut any straps or reins which get entangled, and thus save the horses from drowning.

It is to be noted that it is impossible to direct from the bank of a river the movement of the men swimming across it, for the noise of the water and the neighing of the horses prevents not only the words of command from being heard, but also the trumpet sounds.

When a body of cavalry has to cross a river every man, whether he can swim or not, must accompany it. Time is lost in taking the extra precautions necessary to ensure the safety of men who cannot swim, and it is, therefore, necessary that all cavalry soldiers should be good swimmers. From the numerous experiments in swimming which have been carried out by large bodies of cavalry, it has been conclusively shown that *with proper precautions* no accident to man or horse need be feared.

When a native cavalry regiment has to swim a river, it will be often necessary that its camel sowars should accompany it. It is, therefore, desirable that the camels should be practised in swimming, and in doing so that the following instructions be attended to.

A rope must be fastened securely to the camel's head. The camel is led into the water, and the end of the rope held on a strong firm raft or boat, which is rowed across the river. When out of his depth the camel sometimes begins to swim, but frequently lies on his side and allows himself to be towed across. Care must be taken that the camel's head be held well above the water, close to the boat; the rope used need not be a long one. The tendency with the camels is for the head to go under and the hindquarters to rise above the water; this can be counteracted by making their drivers sit astride on their rumps, which forces their hindquarters down and the heads up.

JOURNAL OF THE UNITED SERVICE INSTITUTION OF INDIA, No. 70, (MILITÄR WOCHENBLATT, 11 JAN., 1888).

Cavalry Manœuvres in the Odessa District, August, 1887. From the Russian Invalide, No. 244.

Object of the manœuvres: Strategic instruction for the cavalry to conclude with an attack in mass on the enemy's flank and rear.

The troops taking part were the 7th and 8th Cavalry divisions with their horse artillery and the cadets of the Jelissawetgrade college. Total, forty-six squadrons (sotnias) and twenty-four guns.

The manœuvres lasted from the 7th to 12th of August, with one day for rest. They were conducted by Lieut.-Gen. ALLEN, Commander of the 7th Army Corps.

Telegram from the officer commanding the district to the commander.

"*The first half of the manœuvres is to be devoted to the protection of the strategic front and the discovery of the strength and line of operations of the enemy.*

When this had been carried out the attack on the enemy's rear and flank is to be proceeded with, but during these operations the strategic front is not to be unguarded. During the second half of the manœuvres the protection of the front will be carried out by a skeleton force, in order to allow of more troops joining in the actual attack.

As far as possible only advanced guard engagements are to take place.

In devising the result of an encounter, the condition and freshness of the opposing forces will be especially considered."

COMPOSITION OF FORCES.

Eastern force.—Commander, Lieut.-Gen. BODISSKO. Strength, twenty-eight squadrons and twelve guns.

Western force.—Commander, Lieut.-Gen. BOGOSDIS. Strength, eighteen squadrons and twelve guns; also (imaginary) sixteen battalions, four squadrons and thirty-two guns.

Idea.—The main body (imaginary troops) of the western force are occupied at Bender until the 10th of August, when they are to commence their march on Odessa. (This is practically a flank march, with left flank exposed). The cavalry of the western force are to protect the advance of the main body, and at the same time to push forward in the direction of the enemy to ascertain their strength and intentions.

The cavalry of the eastern force, whilst protecting the advance of their (imaginary) main body on Wosnessensk, are to attack the enemy's cavalry with the object of driving them back and obtaining information on the strength and position of their main body.

Operations.—On the 6th of August the main bodies of opposing cavalry were about 150 versts (100 miles) apart; the eastern force occupying Jekaterinowka and the western force Frendenfeld.

On the 7th and 8th the eastern force advanced to Mosstowoje, Liachowo and the western force remained stationary. The two forces had now got touch of each other.

The 9th, a rest day.

This concluded the first half of the manœuvres.

The idea for the second half was:—The *eastern force* to attack the left flank and rear of the enemy in as great strength as possible, at the same time protecting the advance of their (imaginary) main body. The western force to repulse the attack of a stronger force on its flank and rear.

For the above purposes the eastern force had twenty squadrons and ten guns available, and the western sixteen squadrons and ten guns.

The remainder of the respective forces were used as skeleton troop to protect the front.

Before the advance the following arrangements were carried out in the eastern force. All weak men and horses were told off to protect the front. Every man received a three days' ration of biscuit and groats, and about two pounds of cooked meat. A daily ration of oats was taken in the corn bag for the horses. Besides this, in the wagons with the troop, was two days meat and preserved vegetables, each wagon carrying two days' provisions for two squadrons. One change of linen only was taken and the second pair of boots and socks was left behind.

On the 10th and 11th of August the eastern force continued its march for the purpose of getting round the enemy's left flank, and the western force retired on its main body, which was now supposed to have made two marches towards Odessa.

On the 12th the eastern force continued its march, with the object of attacking the flank and rear of the enemy. The main body of the western force made another march in the direction of Odessa and their cavalry followed them with such rapidity that they lost touch of the enemy in the morning.

The operations were brought to a conclusion with the decision that the eastern force had failed in its endeavours to attack the flank and rear of the enemy within the prescribed time.

In the last three days of the manœuvres the eastern force covered 178 versts (105 miles); this advance was not made by roads but chiefly across a country whose nature was constantly changing.

In the eastern force one horse died, and *fifty-one* were unable to continue the advance. Sixteen per cent. were laid up.

In the western force one horse died, and eleven per cent. were laid up.

The total casualties of horses was about fourteen per cent. But it must be remembered that several horses were taken on this march which were shortly to be passed out of the ranks. This should reduce the above percentage by one-third.

JOURNAL OF THE ROYAL UNITED SERVICE INSTITUTION, No. 142.

Regulations for Field Service in the German Army.

The regulations hitherto in force relating to the special duties of the troops when on service, and their training in those duties during peace, date back to the year 1870. From the fact that it was not considered necessary to alter them during the long series of years that have since elapsed, it is evident that they were regarded as generally sound, and did not call for any radical alteration, such as was introduced into the fighting formations after the war of 1870–71. In certain points, however, modifications and additions have become necessary, and they are embodied in the new regulations, of which a portion was published last year as a provisional measure. The whole ground covered by the regulations in their complete form may be taken to include all the duties which troops in the field are called on to perform when halted or on the march, with the exception of the actual tactical formations for fighting purposes. And besides indicating the nature of these duties and the manner in which they are to be performed in the field, instructions are also given regarding the training in them of the troops during the annual peace manœuvres.

The regulations of 1887 are divided into two parts, of which the first treats exclusively of duties in the field, and the second consists of instructions for the autumn manœuvres. Under the former are included the Ordre de Bataille and distribution of the troops; the communication between those exercising command and the troops; reconnaissance; measures for protection of the troops; the march; quartering of the troops; baggage; supply; the sanitary service; the supply of ammunition; railways; telegraphs; and field gendarmerie.

The second part deals generally with the annual training of the troops in field duties by means of autumn manœuvres. This comprises the distribution of time available under varying circumstances to drill by regiments and brigades, and to the more extended manœuvres; the conduct of manœuvres of one force against another, and of a force against a marked enemy, with various other details relating to peace manœuvres.

In the present paper the first part only will be dealt with, and that only so far as to include the quartering of the troops. The further subjects comprised in that part, together with the whole of the second part, will be reserved for future notice.

The work as a whole is well worth studying in its every detail: but for the purposes of the present *précis* much that is of interest to those who would go closely into every particular of the regulations must be restricted to a brief notice. In this paper the foregoing remark applies especially to the portions which treat of the communication between those exercising command and the troops, and of their quartering in cantonments or bivouac. In these sections much has been omitted, not because the subjects in themselves are wanting in importance, but rather on account of their being treated in the regulations in too detailed a manner for reproduction in a brief notice.

The sections dealing with the measures to be taken by the troops for their protection, whether on the march or when halted, have on the other hand been reproduced at considerable length; and though by no means in every particular a literal translation, the more *important paragraphs are so in substance.*

In an introduction of some length the occasion is made use of to record the qualifications required from both officers and men in time of war, if they are to be in a position to look forward to success with any feeling of confidence. The necessity for devoting from the outset of the military career the most careful attention to instruction and practice, in every particular, is dwelt upon with an earnestness which must make every officer feel how important may be the bearing of details only too frequently regarded as trivial.

The position of the officer is summed up in a very brief definition: he is the instructor and leader in every branch of the soldier's duties. As regards his own instruction, it follows that a high standard is required. Besides the regular experience learnt in the ordinary course of his duties by means of the periodical military training and manœuvres, the theoretical *study of his profession is encouraged by means of participation in Kriegs-spiel, lectures,* winter essays, and the working out of practical schemes on the ground.

H. H.

COMMUNICATION BETWEEN THOSE IN COMMAND AND THE TROOPS.

Written orders should be the rule. Even if the order can be given verbally, as may be the case with assembled troops, long orders will be taken down to dictation. When it concerns only simple arrangements, of a single direction, an order may be given verbally. As a general rule, it should be borne in mind that an order must contain all the necessary information to allow of a subordinate carrying out what he has to do, without however containing *further directions than are required for this purpose.*

"Felddienst-Ordnung," bom 23 Mai, 1887. Berlin.

In sending orders and reports in the field they should be reduced to writing whenever time and circumstances will allow. If to be delivered verbally, the bearer of it must repeat the substance of the order aloud before riding off. Important orders and reports should, if possible, be sent by officers.

In the case of particularly important ones, or if the communication is insecure, several orderlies may carry copies of the same order by different ways, or several may be sent in company.

When great distances have to be covered, and at night, it may be desirable to dispatch with the officer a party of infantry in carriages.

Frequently, and especially when the written paper is to be destroyed if the enemy are likely to seize it, it is prudent to make the bearer acquainted with its contents.

RECONNAISSANCE.

The duty of covering the front of its own army and gaining information regarding the enemy's position and movements is almost entirely undertaken by the cavalry. In a restricted sphere, the divisional cavalry provide for the security of the troops to which they are attached from surprise, especially on the flanks, when they are engaged. The duties of the cavalry when so employed are not restricted to simple observation alone. No possible sources of information are to be neglected; the inhabitants must be examined, prisoners taken when practicable for a similar purpose, newspapers, letters, and other available correspondence carefully investigated for any information that may prove useful.

Though, in order to attain its object, it may become necessary for the covering cavalry to engage the enemy, the main purpose to be kept in view by them is observation. For this purpose small bodies are best adapted, and officers' patrols, composed of subdivisions or squadrons under selected officers, are usually employed. This allows of small patrols belonging to the enemy being overpowered, and of orderlies being sent back with reports, as occasion requires. Where circumstances necessitate it, the bulk of the patrol will be left behind, concealed from the view of the enemy's advanced troops, while the officer, accompanied by one of the best mounted men, goes forward to reconnoitre.

Every independent cavalry leader, down to the squadron commander, and even the officers' patrols, is responsible that the touch obtained of the enemy is not lost.

MEASURES OF SECURITY.

General Considerations.—In the vicinity of the enemy every body of troops requires to be specially guarded. The portion of the troops told off to do this has for its object to protect the whole force from surprise, to afford sufficient time to enable the commander to issue his orders and to allow of their being carried out.

The division of the troops may be made in different ways; but it is based always on the same principle that the larger bodies push forward smaller detachments of a strength depending on that of the whole body employed. Whereas a large force pushes forward several bodies of troops, one behind the other, becoming smaller as they approach the enemy, to protect it, a smaller force can restrict its measures of security to the smallest possible detachments, provided it is itself disposed as the protecting body of a greater force.

On the March.—Measures of security are required on the march, because being tied to the roads necessitates a great extension in depth, and consequently demands a certain time for deployment. The troops told off to cover the march have also the task of obviating slight disturbances, in order that the march of the whole column may not be interrupted unnecessarily. In the main of a good reconnaissance service is the first step to security; still its completion by means of immediate measures of protection must not be dispensed with. The main body of advancing troops has its march covered by its "advanced guard;" the main body of retiring troops by its "rear guard." The protection of the flanks is effected by "flank detachments."

THE ADVANCED GUARD.

Although cavalry divisions in front provide in some degree for the security of the troops following, and form in a more extended sense their advanced guards, still the separation from the main body of a special advanced guard must not be neglected. Its strength and disposition are dependent upon the nature of the ground and the strength of the force—in large bodies upon that of the advanced portion. It consists of about one-sixth to one-third of the infantry and sufficient cavalry. Artillery will be attached as required.

Pioneers will generally be attached to it, to remove the obstacles or perform any other technical work. If the construction of a bridge appears likely to be required, a bridge train is also attached to the advanced guard. If an engagement is foreseen, part of a sanitary detachment is also allotted to it.

The interval between the advanced guard and the main body is dependent upon the ground, its own intentions and strength, and the considerations regarding the enemy. On the one hand it must be sufficient to secure as far as possible the march of the main body from interruption, and on the other it must be no greater than to allow of the main body supporting the advanced guard at the proper time. In an advance having the offensive in view the distance can be restricted so as not to delay the deployment to the front.

The advanced guard is divided into the main body, the advanced body, and the advanced guard cavalry. How far under cover of the cavalry a special distribution of the advanced guard can be made, depends upon circumstances.

The main body comprises the bulk of the infantry of the advanced guard, and also the artillery, if this forms a part of it.

The advanced body consists of from one-fourth to one-third of the infantry of the advanced guard, the necessary cavalry and pioneers, preserving as far as possible units intact.

The cavalry attached to it furnishes the detached party or point, and provides the necessary patrols. The advanced body marches so far in advance of the main body that it can

secure for it in case of contact with the enemy the necessary time to form up, ordinarily a quarter to half a mile, with small advanced guards a sufficient distance to prevent the main body being surprised by effective rifle fire.

The point, if possible led by an officer, otherwise by a non-commissioned officer, with four to six men, moves at an average distance of from 200 to 400 paces in front of the advanced body. As a rule its leader leaves one or two men on the road, utilizes the elevations in its vicinity to obtain an extended view, and makes up the distance again by increasing his pace. The men ride with their carbines on the hip only in covered ground with them slung. In the dark or in thickly covered country the cavalry point can be reinforced or relieved by infantry. An infantry point consists of an officer with a section, so as to offer some resistance and be able to spread out and examine a greater breadth of ground without having to call upon the advanced body. The infantry point moves as a rule in a skirmishing line, two men being ordinarily placed midway from the advanced body as a communicating file.

Infantry marching alone forms its advanced guard in a similar manner. Cavalry divisions do so also, but their functions exclude any definite forms being adhered to, and the same applies to cavalry bodies marching alone.

Every measure taken by an advanced guard must aim at securing the steady and continuous march of the whole force from being unnecessarily interrupted. The essential thing is to protect the troops from unexpected serious attacks. Small bodies of the enemy are endangered by the leader of the advanced guard feeling that he has during the advance, the main body of the force behind him and can act energetically.

FLANKING DETACHMENTS.

Where it is necessary to cover an extended front especially on more than one road, so that the power of resistance of the advanced or rear guard cavalry is not sufficient, a flanking detachment is furnished from the main or advanced body and disposed in the same manner as the latter. If this measure should not be found sufficient for the protection of the flank force—especially in flank marches—it will be advisable to send out a flank detachment from this force also. Its strength and composition are dependent upon the degree of the danger and on the ground.

In flank marches this protection is often provided for best by leaving the existing advanced or rear guard to form the flank detachment intact and furnishing a fresh advanced or rear guard from the main force.

Cavalry marching alone, or in exceptional cases in the vicinity of the enemy, infantry alone, take similar steps for the protection of their flank.

THE REAR GUARD.

Whereas the advanced guard can reckon upon early support by the main force, the contrary is the case with the rear guard. The latter should consequently choose its ground for an action, and by occupying positions with obstacles in front, force the enemy to deployments which will gain time, or if possible to make *détours*. In case of extremity the rear guard must not shrink from a tenacious resistance, and its composition must be arranged beforehand with this in view. It must in consequence be much stronger than an advanced guard, particularly in artillery, as the employment of this arm alone allows of the enemy being forced to deploy at a distance. Horse artillery is particularly suited for this service.

The distribution of a rear guard is ruled by the nearness and the attitude of the enemy. If not forced by these considerations to march in fighting formation, the rear guard moves in column of march. Its distance from the main force is on an average greater than that of the advanced guard, so as to allow of any delays in the march. The formation on the march is in a main body, a rear body and the rear guard cavalry, composed in the same manner as the equivalent portions of the advanced guard. In order to preserve touch of the enemy, the rear guard cavalry remains a sufficient distance back, and if the enemy pushes the retirement, it must specially watch any attempt to gain the flanks. Care must always be taken in forming a front to the enemy that too weak a force is not placed in the front line.

If time admits preparations should be made to delay the enemy by means of blocking the roads, destroying bridges and measures of a like nature. These works will be more thoroughly executed if the pioneers, or infantry detailed for the purpose, can be carried in wagons. Infantry or cavalry marching alone form their rear guard in a similar manner.

MIXED OUTPOSTS.

The first step towards obtaining security is by an active endeavour to gain intelligence of the enemy, and the nearer the enemy is, the greater becomes the necessity for this. If the necessary protection is not afforded by independent cavalry pushed forward, mixed outposts are the rule, the two arms taking their share of the duties in such a manner that the cavalry undertakes principally the reconnoitring and day duties, and the infantry principally those by night. Their strength depends upon the attitude of the enemy, the strength of the main force and the nature of the ground, and their disposition upon the length of time they are to be in position and the time available. A prolonged halt in face of the enemy necessitates a more perfected disposition, while troops that halt after a march, with the intention of moving off again in the morning, must be contented with the simplest measures. Whereas, therefore, fortress warfare demands a systematic division of the outposts, and especially a rigid advanced line, in the field the forms are elastic and are adapted to the changing circumstances.

By day and even more by night the movements of troops before and after an action are restricted to the roads. It follows that the roads should be occupied which lead towards the enemy. If these are seized, the enemy's more considerable movements cannot take place undetected; smaller ones off the roads may disturb the outposts, but they will not endanger the main force. Whereas, after the close of an action, the outposts will preferably be formed from

intact troops, after a march the advanced or rear guard undertakes the duty of covering the force and placing the outposts without further orders. As a rule the main body of the guard halts where it is, and the advance or rear body forms the outposts at the halt.

The advanced or rear guard consists for the period of the halt of the main body, with which is the commander, and of the outposts. If there are in front of the outpost line localities or points to be specially occupied for the protection of the whole, this can according to their respective positions be advantageously done from the main body. These detachments are then constituted as a portion of the outposts. If the posting of the outposts requires, on account of the vicinity of the enemy, to be covered, the advance or rear body may be temporarily halted, and the outposts thrown out from the main body covered by the former. Whereas this is an exception, on continuing the march it is an appropriate rule to leave the outposts in position and move the new advance body out under their cover.

The outposts are divided into a main body, the outpost companies, and the outpost cavalry. The main body forms, as a rule, near the main road and behind a defensible position, the first support of the advanced companies. These companies form the main protecting line, being placed as far as possible in ground offering facilities for a tenacious defence in case of attack. They protect themselves by pushing forward infantry pickets and non-commissioned posts at night, and if necessary in the daytime as well. According to the local circumstances the main body of the outposts may also send these out direct to its front or flank. The outpost cavalry is in the front line by day, taking over the duties of covering the force and having its first support in the companies. At night, a portion of it may remain with the advanced line.

It will only be advisable to attach artillery to the outposts under very exceptional circumstances. If so employed by day it goes back to the main body of the outposts at night.

Mounted orderlies will be attached at the rate of from four to six to the main body and to each company, and one or two to every infantry picket. The whole of the outposts are under the charge of the outpost commander, who is as a rule the commander of the advanced body.

When the conformation of the ground, readiness for action, or the extent of the front requires a division of the outpost line, two or if necessary more outpost sections may be formed adjoining one another. In this case each of these sections is allotted as far as possible to one battalion, or the portion of it belonging to the outposts which then forms within the section its own main body and outpost companies, receives its own cavalry, and is under its special commander.

From the diversity of circumstances, of the object in view, and of the ground, *no instructions can be given for outposts which will meet all contingencies. In each individual case the distribution, orders and duties of the outposts must be regulated according to the special circumstances.*

On the order to halt at the latest, the commander of the advanced guard indicates the position for the night of its main body, and receives information of the main body of the outposts, and other directions as to what he has to do. He then draws up, by the help of the map, his advanced guard order.

This comprises:—

According to the circumstances he will state more or less distinctly the considerations, a knowledge of which will be required by the outpost commander to enable him to make his arrangements promptly.

Information regarding the general situation, the enemy, the position of the main bodies of the force, and of the advanced guard.

Detail of the outpost commander, and the troops to be placed under him: the task intrusted to him, and the other instructions necessary to allow of his carrying it out (what the outposts are to do if attacked by the enemy, what localities are to be more particularly held, what points should be more especially watched, &c.).

If the formation of several sections is necessary, the boundaries of these must be fixed.

At the same time orders should be issued for the troops not detailed for the outposts, and directions as to what special detail is to be made from the main body of the advanced guard in the vicinity of the outposts; and further, where the commander of the advanced guard will be found.

THE OUTPOST COMMANDER.

In order to avoid loss of time and going out of the way in placing the outposts, the commander will then by the aid of his map give his outpost order, as a rule while marching:—

This will comprise, broadly, the directions required to ensure the judicious arrangement of the outposts being quickly carried into effect.

The following points are essential:

Indications regarding the general situation, the enemy, the situation of the main force and the main body of the advanced guard:

Indication of the general line to be taken up by the outpost cavalry, as well as of the roads which are to be watched by it:

The position of the main body of the outposts, and where the outpost commander will be; the division of the sections for the outpost companies:

Allotment of mounted orderlies; and of the cavalry to be attached to the infantry:

Directions as to the procedure if attacked by the enemy:

To these are generally added the indication of the roads to be occupied by examining parties, the means of security to be provided direct from the main body of the outposts, the time for the retirement of the cavalry in the evening to the main body of the outposts; as well as directions for the night.

Other measures, such as blocking roads, and the special conduct of individual formations, &c.

On receiving the order each portion marches by the nearest way to the place assigned for it. The commander of the outposts further instructs his main body regarding the provision to be made for its shelter, the degree of readiness to be maintained, and the necessary measure for its own protection. Though, after the outposts have been placed, the presence of the commander may be necessary with the advanced line for the purpose of gaining information and controlling the position, still he must not overlook the fact that his duty of commanding the whole of the outposts requires his presence with the main body of them, to which all reports are sent and from which orders are awaited. If he should go to the front, he must hand over the command of the main body to the next senior officer, who for this reason must be made well acquainted with the situation.

The bivouac or locality where the commander is quartered must be fixed so as to be easily found and buglers and mounted orderlies must always be at hand. The outpost companies and cavalry as soon as they have got into their positions report upon these in the form of a simple sketch, which is sent to the commander of the advanced guard.

THE MAIN BODY OF THE OUTPOSTS.

The general situation, especially the nearness of the enemy, will rule the degree of readiness in which the main body must be kept. Infantry keep on their accoutrements, artillery must not be unharnessed, and their guns, which should be kept as far as possible close to the road, must never be placed in closed farm buildings.

The commander decides whether the main body is to be wholly or partially in bivouac, or under cover in available buildings; if the whole or a portion at a time, is to cook and horses to be fed, and if the latter are to be unsaddled by detachments or only the girths loosed.

The main body protects itself by exterior guards. Except in case of alarm no calls are to be sounded or signals made. If the alarm be given in the front line, the main body gets under arms, ready to take the offensive or assume the defensive.

THE OUTPOST COMPANIES.

The number and position of these companies depend upon the ground, and especially the disposition of the roads. A company placed on the main road or in its vicinity is generally the weakest in the line. The companies will not be numbered as outpost companies, but designated by their ordinary numbers. Their distance from the main body must afford it the necessary time to form up: if a company occupies a particularly important point, or one specially favored by the ground, the most determined resistance will be provided for there, and it will be supported from the main body.

The commander moves out in front of his advancing company and rapidly examines the ground, with a view to deciding where it is to be placed, and what parties it will have to send out for its protection. According to the nature of the ground, and especially the roads, pickets or non-commissioned officers' posts, or both, may be necessary.

The protection of important roads and points is provided for in principle by pickets; independent non-commissioned officers' posts assist towards establishing connection and the security of the flanks.

All portions must, by their situation, be hidden as much as practicable from the enemy's view.

The posts pushed forward direct from the company, which in addition to the required number of men for reliefs have generally a few for patrolling duties, have on a small scale the same duties to perform as the pickets, so that their conduct is ruled by like principles. The pickets and posts within the company are numbered from the right, irrespective of whether they are pickets or posts. Whether one or other of the pickets should remain out by day depends essentially upon the ground, and whether this is so covered that the cavalry alone cannot ensure adequate protection.

The men of the outpost companies fall out, but a portion must always be in readiness in the vicinity of the rifles and packs. No one must leave the company without orders. The mounted orderlies must not unsaddle, and only loosen the girths of their horses, and water and feed them singly. The company posts a single sentry, or if in a building, a double sentry over the arms; in particularly covered country, further double sentries may be placed for its immediate security.

The company commander is responsible for the position and duties of every portion of his company.

All further measures for the conduct of the company, whether the whole or a part should be placed under cover, the supply of water, requisitions for completing provisions, cooking, whether for the whole at one time or by relays, the wearing of greatcoats, &c., will all be regulated by the company commander, according to the actual circumstances, and he will be personally responsible that *in the event of an attack the company shall be at all times in a complete state of readiness for action.*

He reports as early as possible to the commander of the outposts the position taken up and the arrangements for the night, by means of a simple sketch with the necessary explanations. The neighboring companies and the cavalry in front are to be informed of the position of the company.

THE INFANTRY PICKETS.

The strength of a picket is ordinarily a subdivision or a half subdivision. The time for marching off must be so arranged that they are able, after reconnoitring the ground, to take up their positions before dusk. In placing the advanced posts, less regard is had to forming a connected chain than to the occupation of the roads and paths by which the enemy might advance, the intervening ground being searched by a regular patrol service. The number and position of the posts is decided by the officer on guard: each post will be formed either by a double sentry or a non-commissioned officer's post. To allow of their fulfilling their object of seeing well in front, they are placed in the day as well as by night on heights in covered positions.

Those which are particularly important are exposed, as well as the examining posts, are furnished by non-commissioned officers' parties of six men, of whom two are on sentry and the rest form reliefs and remain in the immediate vicinity. The double sentries furnished by the pickets should not ordinarily be at a greater distance than 500 paces. As a rule, in placing the sentries, the six men told off for the post are marched direct to it from the picket by a non-commissioned officer, who, after having posted the first relief, marches back the other two reliefs, who in this manner obtain a knowledge of the ground. If the number and position of the sentries cannot be decided upon beforehand, they are posted successively. The posts whether non-commissioned officers' or double sentries are numbered from the right. If the outpost cavalry does not suffice to cover the placing of the posts, infantry patrols are sent out for that purpose; the remainder of the picket piles arms, and a single sentry is posted over them.

On the return of the picket commander he forms patrols, and sees the piles of arms arranged, so that the reliefs and patrols can take their rifles without disturbing the rest of the men. He reports to any superior officer, but the men do not stand to their arms. Packs and the back pouches are taken off, but the rest of the accoutrements, with the front pouches, haversack, water-bottle, and intrenching tool, are kept on. The mounted orderlies must only water and feed their horses singly.

The commander of the picket is personally responsible that *in case of attack the picket shall at all times be ready for action.*

All persons brought to the examining party who are not clearly recognized by the commander of the picket as belonging to the force, will be handed over to the company. If the picket be posted during the day, the commander must examine the ground within his section, so as to be ready for the requirements at night; but he must always be easily found if wanted. At night he always remains with the picket.

The commander of the picket reports the position he has taken up as early as possible to the company commander.

SENTRIES.

The following general instructions apply to all sentries in the advanced line.

They must look out continuously in the direction of the enemy, and pay attention to every suspicious sign.

They must not lie or sit down without orders, or let their rifles out of their hands.

The moment anything is ascertained regarding the enemy, one man reports it to the picket or company.

If there is danger in delaying, or an attack is recognized, several shots are to be fired, and one man reports the cause.

During the day the persons recognized as undoubtedly belonging to the force may be passed through the line of sentries. All others will be directed to the examining parties. At night every one approaching will be challenged, and the rifle brought to the ready. Any one not halting on a second challenge will be fired at. If recognized as belonging to the force they will be passed through. All other persons will not be allowed to pass, but will be directed to the examining posts. Any one not going there direct, but trying again to pass, or not attending to the orders of the sentries, will be fired at.

Individual officers with a small escort coming from the enemy with a white flag or handkerchief, or sounding a call at a distance, and individual soldiers recognized as deserters by their throwing away or reversing their arms, will not be treated as enemies, but will be directed to the examining posts. No sentries salute, nor are they to be interrupted in their look out by the presence of superior officers; they only answer any questions addressed to them.

On relief the men of the double post place themselves side by side fronting the enemy, and give over their orders.

These general instructions are *completed when the sentries* are posted by certain special instructions given by the picket commander; these are:

The denomination of the post; the situation, the position, and denomination of the neighboring posts; situation of the examining party, the picket, and the company, and the nearest way to them.

Information regarding the ground, so far as this comes into consideration and is within the man's understanding. If the sentries are to stand with the rifle carried on the arm, ordered, or slung.

If the communication will be kept up with the neighboring posts by means of patrols.

If the pack may be taken off, and if smoking is permissible, together with any orders necessitated by the special circumstances.

The picket commander determines in each case whether the reliefs of the non-commissioned officers' posts may be placed under cover, and the *measures of security to be taken by* them. The examining post allows all those evidently belonging to the force to pass through, and conducts others to the picket or company. Bearers of flags of truce are blindfolded and deserters disarmed before being sent back.

PATROLS.

The arrangement of the patrolling service has to be settled from the point of view that no break must occur in the system of gaining information.

The value of every patrol increases with the nearness to the enemy and the promptitude of its report. *Accordingly, under all circumstances by night as well as by day, cavalry patrols must be sent out.*

The cavalry patrols will be completed at an appropriate distance by infantry patrols. The conduct and instruction of these will differ according as they are intended to go beyond the line of sentries or not, and are consequently meant more or less to come into contact with the enemy.

The selection of the patrols to be sent beyond the line of sentries towards the enemy is of particular importance. These patrols are composed of not less than two men under a skilful leader, on important occasions an officer; and their object will be obtained less by careful instructions than by the choice of the men, and especially of the leader. The knack of finding the way quickly in strange ground; endurance, such as can only be attained by having their heart in the work; presence of mind and cunning, having in the moment of danger always some expedient to resort to for escape, are the desired qualifications for this service. The patrols move circumspectly and without noise; frequently halting to listen. They study the ground as much as possible, so as to report on it, and, if necessary, act as guides; they avoid fighting and being cut off by the choice of a different way to return. They should be sent out without packs and in forage-caps, and the hour for their return fixed.

Patrols of two men within the line of sentries are sent out from time to time to visit the sentries, examine the ground not occupied, and communicate between the sentries. In the event of firing or alarm, a patrol is sent out at once to obtain information and afford a first support.

The relief of the pickets is best effected about daybreak, and is carried out as quietly as possible, covered by patrols from both the old and new pickets. The new picket marches up to the old one, and both commanders proceed to carry out the relief of the posts and sentries.

All patrols, when they cross the line of sentries, must inform the neighboring posts in what direction they are going, and, on their return, what they may have observed of the enemy.

THE OUTPOST CAVALRY.

The strength of the outpost cavalry must be adapted to the work of covering the whole breadth of the front well in advance. The practice of bringing the cavalry back at night allows of the same squadrons being more frequently attached to the outposts than can be the case with battalions of infantry. Generally speaking, the proportion is one squadron to every battalion, and it is desirable to keep squadrons intact. The first duty of the commander of the outpost cavalry is to maintain or establish touch of the enemy, or if at too great a distance, to move out well in advance and observe the ground in front.

He must decide promptly on the measures to be adopted, so as to arrange for the roads specified in the outpost order being watched. In covered ground breaking up can be avoided less than in open country. Though the weak strength of the body remaining behind in close formation will hardly admit of the power to attack, still a skilful occupation and command of points which must be passed by the enemy in a sudden attack will ensure his being materially delayed by carbine fire.

The distribution of outpost cavalry depends upon the circumstances, and it may consist in the posting of one or more pickets, or only of non-commissioned officers' posts, or both, to the front and flanks. The distance from the outpost companies in rear will be sufficient to allow of timely notice being given them of any threatening danger. The outpost pickets must not unsaddle, but only loosen the girths, feed and water by reliefs. It depends on the more or less threatening state of affairs whether the whole or a portion may be placed under cover, which depends also on the condition that the horses can be brought out quickly. The occupation of quarters necessitates the sentry on the arms being doubled. It depends, amongst other things, upon the duration in the position whether fires are to be lighted and rations cooked.

The commander is personally responsible for all these points, and also *that an attack shall always find his troops ready for action.* He reports his position to the commander of the outposts as early as possible. This report, if practicable in the form of a simple sketch with the necessary explanations, is sent in the first instance to the outpost companies for their information. The company commanders must further obtain from the leader of the cavalry information regarding their positions, and *vice versâ*, communication being established between them.

The strength of a picket will be about one officer and a subdivision. *A cavalry picket must never be placed in a closed space.* It posts a single dismounted sentry on the arms. The commander goes out to his advanced line to inspect the vedettes and non-commissioned officers' posts, if anything suspicious is reported, or if firing takes place, so as to see for himself without delay what is going on.

While he remains with the picket he reports to any superior officer who may come to it. He always keeps some patrols ready, and sees that the whole of the picket are made acquainted with the ground, especially with the nearest way to their own squadron, the closest outpost company, and the main body of the outposts.

All other measures for the conduct of the picket will be regulated by its commander, and he will be personally responsible *that an attack shall always find the picket ready for action, and that by means of early intelligence the infantry in rear shall always have time to meet an attack.*

A *section of ground will be entrusted to each picket. To watch this, and also to protect* the picket, the commander places one or more non-commissioned officers' posts or vedettes, or both. The number and position of these are dependent on the following considerations: an extended view, and the power of seeing the neighbouring posts or sentries; when this cannot be effected without great extension, the roads will be occupied and the communication completed between the posts and sentries by means of patrols. Rapid communication is desirable with the pickets.

The non-commissioned officers' posts, of four or more men, will as a rule be all dismounted, and at most two men will be employed to keep a look-out. And further, the sentry even being dismounted and the rest of the men kept out of sight, the whole of the post is easily concealed from the enemy. Patrols from these posts will not be sent out to any great distance.

The roads specified in the outpost order, so far as these lie within the sphere of the outpost cavalry, will be occupied *even by day by examining posts, notwithstanding that* the infantry place their own for the night further back.

The vedette always consists of two or three men, of whom at least one must be mounted. They are relieved as may be decided by the commander of the picket. The advantage they offer is that owing to their small size the picket is less weakened by their withdrawal from it than by non-commissioned officers' posts. So far, as in the foregoing, special rules are not given for non-commissioned officers' posts and vedettes, the principles laid down for infantry will be followed.

When the cavalry pickets are placed, they are allotted definite patrolling duties by the outpost commander. A more extended examination of the ground is provided for by the commander of the outpost cavalry or the superior commanders.

Under all circumstances the cavalry even at night must keep touch of the enemy by means of patrols. With this object it may be advantageous to push forward stronger posts under officers beyond the outpost line, not locally attached, which attach themselves to the enemy's movements.

The outpost cavalry must maintain constant communication with the infantry in rear. The pickets and independent posts must acquaint especially the neighbouring infantry without delay with any important information.

OUTPOSTS OF INDEPENDENT INFANTRY.

The outposts of infantry, provided only with mounted orderlies, will be distributed in the same manner and on similar principles as mixed outposts. In order to make up in some degree for the absence of cavalry, the infantry pickets will be placed from the outset, and the mounted orderlies of the companies employed in more extended patrolling duties, especially during the day. If no mounted orderlies are attached, their place must be taken as far as possible by infantry patrols within a more restricted sphere.

OUTPOSTS OF THE CAVALRY DIVISIONS AND OTHER INDEPENDENT CAVALRY.

The work of the cavalry divisions or other independent cavalry must, even when halted and resting, be carried out by the cavalry alone, independent of the other arms. The great extension which the task of great masses of cavalry frequently demands will often prevent it from assembling for the night within a small area, or arranging a connected outpost system. It will generally happen that each place occupied by it, each bivouac, &c., is protected by its own outposts, and these will, according to circumstances, vary very much in their strength and distribution.

The close proximity of the enemy and a hostile population demand from the cavalry constant and wearing duties, for these will not be restricted to placing outposts, but special measures of security will frequently be required in the halting places. Whilst the power of reconnoitring far to the front is a protection against the enemy's infantry, an energetically advancing cavalry will not long be kept in check if there be nothing beyond the attack to oppose them. On the other hand, blocked roads, barricades, &c., even of the simplest form, protected by carbine fire, will delay large forces of cavalry for a long time, if they be disposed several in front of one another at places by which an attack must pass. In doing this it should not be left out of consideration that the means of advance must not be altogether unprovided for. The pioneer detachments of the cavalry divisions will be usefully employed in connection with this service. Here and there they may also be utilized to occupy specially important points, notwithstanding their weak effective.

If the outposts have occupied favorable localities or positions, their defense by means of dismounted men will be of more use to the security of the whole than the immediate abandonment of them for the purpose of assembling. The outpost order must provide for this.

If the circumstances allow of the cavalry being kept together, the composition and disposition of the outposts, as in the case of mixed outposts, will consist of a main body and outpost squadrons, from which the necessary pickets and independent posts will be pushed forward. As far as practicable definite objects will be prescribed for the patrolling service of each body. The same principles also will apply as in the case of mixed outposts.

If the cavalry division is widely extended, as for example by brigades side by side, the outposts of the several groups will generally consist only of squadrons, with the necessary pickets and posts sent out. Besides the placing of regular outposts, at a distance from the enemy, advanced squadrons furnish an effective means of protection and gaining information. Free in their movements, they attach themselves to the enemy's movements, and on this account are best enabled to provide for their own requirements. Besides they can offer effective resistance to attack, and cause delay by the occupation of important points lying well in advance of the outposts, such as bridges, defiles, &c.

OUTPOSTS IN FORTRESS WARFARE.

The Attack.—In operations of this nature the object of the outposts is not limited, as it is in the open field, to gaining time for the main force they cover to prepare for action, but extends further to the protection of valuable and not easily moved material, as well as the complete shutting in of the enemy's garrison.

At the commencement of the investment, and in some portions of the ground throughout the operations, the employment of cavalry outposts will suffice. With the further course of the attack, mixed outposts will frequently be employed; whereas, especially in the ground over which the actual attack is to be conducted, the outpost service assumes a special stamp of its own, and falls entirely to the infantry.

On the front of attack from the first and for a long time in close contact with the enemy, which grows closer as the attack advances, the outposts are frequently exposed to artillery fire, often to rifle fire, and always to sudden attacks.

The outposts will differ from those employed in the field in forming a connected chain of posts, in having the other portions closer up and nearer to one another, and in a more complete preparation of the ground by means of cover, in a determined resistance, and in the

necessity for more easy communications. The establishment of the attacking force in the line of investment demands the immediate preparation of special positions, the placing in a state of defence localities, &c., so as to cover the material and meet sorties. The outpost line may be in advance of this line or partially in it, for the position of the former rests principally upon the fact that every foot of ground won is to be held.

In order to be at all times ready to oppose a sortie vigorously and methodically, it is of extreme importance that every portion of the outposts should be placed in the position in which it will fight. The entire line of investment is divided into sections, each containing its garrison. About one-third of the infantry, often more, forms under the outpost commander the outposts of the section. The outposts are divided into a main body and companies, which, as in the field, furnish the necessary pickets and posts. The main body and the companies will, as far as practicable, be placed in buildings, which will be prepared for ready egress and easy protection, and be placed in a state of defence. Communications will be prepared with the advanced portions, generally by breaking through walls, digging galleries, &c., in such a manner that though not always affording protection from the enemy's fire, they will be covered from view.

In the frequently covered ground through which the outpost line may run, as through villages, woods and gardens, it is of great importance that every portion of the outposts should know the ground well, so as to avoid confusion, especially at night. The degree of preparation of the whole must in general be more complete than in the field, while on the front of attack it must be still more perfect. The pickets, both for their protection and on account of the wearing nature of the outpost service, must be placed as much as possible under cover, measures being taken by increasing the number of the means of exit, or by widening existing ones to ensure being promptly ready for action.

Numerous and small pickets are preferable to fewer strong ones, as it is desirable, at least by day, that the chain of sentries should be visible from the pickets, and as it is less a matter of occupying the roads than of rapidly supporting the posts. The chain of posts consists, as in the field, of double sentries and non commissioned officers' posts, and they must be so close together that no one shall be able to pass without being fired at. They will consequently have under certain circumstances to be increased in number at night. Cover must also be found or constructed for the posts; for the non-commissioned officers' posts, pits can be dug if necessary. The outpost commanders arrange specially that the outpost line restricts itself to the limits of its section and for communication with the neighboring sections, and these points must be kept constantly in view.

The special instructions for the posts will direct an accurate knowledge of the ground, and call attention to the numerous different and changing aspects of the enemy which are to be particularly observed. Generally the rules given for the conduct of outposts in the field apply equally to those employed in sieges. It may sometimes be useful for the commander of the force to give a "parole." In this case anyone having been challenged and satisfying the sentry that he belongs to the force will be asked for the "parole," which should be given in a low voice. If not in possession of it, the person will be directed to the examining post; if giving a false word he will be fired at.

It must always be borne in mind when in close proximity to the enemy that any movement repeated at settled times will soon be known, so that generally regular relief will be exposed to artillery fire from the fortress. Too frequent relief is not necessary for the rest of the troops. The outpost companies will be relieved according to circumstances, and the entire outposts only after several days. In effecting the relief, care should be taken that as far as possible the troops occupy the sections they are already acquainted with.

The old outposts will not march off until the new ones are completely established and they have acquainted them with all the details and special instructions. Trifling oversights in this respect have often serious consequences. The quarters further back of the troops on outpost duties will not be occupied by other troops if it can be avoided. If circumstances permit, packs and helmets will be left behind in the quarters; but provisions and abundance of ammunition should always be taken. With the advance of the attack, the outposts assume the form of trench guards, pickets, and reserves, and take their place consequently amongst the troops employed in the actual attack, the duties of which are regulated by special principles.

THE DEFENCE.

Before the actual investment, the defenders will keep in view the importance of gaining intelligence regarding the advance of the enemy, and especially the intended establishment of the park. The support for the cavalry which is pushed far forward for this purpose, and for which, in the further course of the siege, there will be no equally important duty, is formed by the outer detachments, which fall back into the outpost position on the further advance of the attacking force. While similar circumstances to those of the attackers lead to a similar distribution and conduct of the outposts, the superiority must be made use of which an intimate knowledge and thorough preparation of the locality ensure. On a closer investment the same conditions apply to the outposts of the defenders as in the attack.

CONCLUSION.

The task of the outposts as a whole points to their not seeking to engage the enemy. A useless skirmish endangers the repose of the whole force, while it may lead to engagements, the limits of which it will be no longer in the power of the outposts to determine.

But an attack must always find the outposts in a complete state of preparation to put out their entire strength, and the leaders of every grade must be prepared for every sacrifice for the responsible object of covering the main force.

THE MARCH.

The far greater part of the efficiency of troops in war consists in their marching. The march forms the basis of all operations, and upon its certain execution essentially depends the result of every undertaking. It is often, indeed, of decisive importance that a force shall arrive at the right time ready for action at the point indicated for it.

Strict discipline on the march, and the greatest care in seeing to the clothing and equipment, as well as to the feeding and health of man and horse, are the most efficient means of maintaining and increasing good marching capabilities. With the infantry it is the footsore men, and with the mounted arms the galled and lame horses, which weaken troops on a long march, and give the measure of the care devoted to the troops and of their discipline.

Constant observation of the infantry, the horses and the mounted men on the march, especially towards its termination, thorough control and appropriate alterations during halts as well as in quarters, especially on halting days, with strict punishment for neglect, are matters for the company and other commanders, and are alone capable of lessening the losses from the fatigues of the march.

Troops accustomed to discipline on the march will, however, only continue to be constantly and completely efficient if every exertion not absolutely demanded by the march be carefully avoided. In this connection, particular attention is necessary in regulating the times for the several units to march off. Large bodies collected at a rendezvous can only be put in motion successively. The arrival of the troops must be regulated accordingly, for waiting there only tires the troops unnecessarily. They must never march off earlier than is necessary, and the assembly of all the several units must always take place in the direction of the march. In framing the order for the march, therefore, the depth of the column, the rate of marching, and the distance from the rendezvous must be all taken into consideration.

The hour for marching must not be fixed too early. Even the advanced portions of the infantry will not ordinarily march off before daybreak, the mounted arms if possible an hour later, so far as their tactical employment does not require an earlier start. It is generally better not to march from a known locality before daybreak, than to arrive in an unknown one in the dark. All unnecessary *détours* are to be avoided. The marching off and in at the conclusion of the march takes place at "attention." Soon after marching off, on getting on to the road, the troops are allowed to march at "ease" in open order and out of step.

On broad roads, one side must be left sufficiently clear to allow of other troops passing; on narrow ones room must be left for mounted men to pass at speed, without delay or inconvenience to the marching troops. The mounted officers with the latter must only use this free space exceptionally, especially with large columns. On bad roads or in hot weather it may be desirable for the troops to be divided and to march on either side of them, leaving the middle free. Individual changes in the uniform is not to be allowed; but any permissible relief in this respect is to be ordered for all at the proper time by the commanders.

The greatest enemy to the march is the heat, and the extreme fatigues it imposes on the troops, especially the infantry, the ranks of which it is capable of thinning in a short time, demand carefully considered remedies.

The most effective is regulated drinking during the march, without it being necessary to make a long halt for the purpose. By means of officers sent on in front the inhabitants of the villages through which the column is to pass will be made to carry out water in as many vessels as are available to either side of the street, in readiness for the troops. With small bodies it will then be possible to allow all to drink by a short halt. If this is not possible, as with large bodies, without causing delay, the water should be handed to the men without halting, and they can drink and fill their water bottles. The disorder this may cause in the column will not lead to any slackening of discipline, so long as it is done by order.

Having the packs carried for the men affords them naturally considerable alleviation and increases their power of marching. But the great augmentation of the baggage inseparable from this measure limits resort being had to it to exceptional and minor occasions. In the formation for the march what is desirable is to unite sufficient looseness in the order to save the men's powers, with the necessity for placing bounds on the depth of the column, so as to allow of a rapid deployment for action. In the infantry, these conditions are best secured by marching in two ranks in section columns of four files, with an increased distance between the ranks. On the march the company leader must see that supernumeraries, subdivision leaders, and non-commissioned officers march in ranks of four files at the front or rear of the subdivisions, and that musicians, sick attendants, &c., are at the rear of the company. He remains himself mounted, placing himself where his control is most wanted.

The diminishing of the depth by closing up the ranks soon increases the fatigue of marching, and is therefore only to be employed exceptionally and for short periods. A more permanent diminution, by increasing the front to subdivisions with half intervals will be permissible when the road does not become narrower frequently or for a long distance.

Cavalry moves in column of threes or of twos. The latter offers increased ease, but prolongs the depth considerably, so that with large bodies column of threes is the rule. The squadron commander rides where the control of the squadron can best be effected.

Artillery marches in single column with increased intervals between the guns. The battery commander is not restricted to his regulated place.

The impossibility of marching altogether at an even pace necessitates also, especially with large bodies, a greater extension of the whole column. This is provided for by intervals between the several units, which become closed up during temporary delays but are regained again subsequently. They are estimated as follows:—

After a company about 15 paces.
After a battalion, squadron, or battery, 30 paces.
After a regiment or division of artillery, 40 paces.
After a brigade, 80 paces.
After a division, 325 paces.

The permanent extension of these intervals is no more allowable than a permanent contraction of them.

Besides the intervals care must be taken to maintain an even pace which avoids delays or marching out for the troops in the rear, and for this the head of the column is responsible.

Cavalry marches in front of infantry and now and then trots some distance. Under favorable circumstances large bodies cover a mile in about twenty minutes. It is a principle that the longer the column is the slower must be the pace maintained by its head. As a minimum rate on made roads and in moderate weather infantry marches 104 paces a minute, cavalry and artillery 100 at a walk, 250 at a trot.

Besides a brief halt shortly after the commencement of the march to allow the men to fall out, every march requires one or more rests according to its length and the temperature. A single one should be held after the greater part of the distance has been covered, and when there are several, every two hours afterwards. For every rest the arrangements must be so made that it is not shortened unnecessarily by movements that are avoidable. So as to fix upon a suitable place without halting, mounted officers should be sent forward to look out for one. If other circumstances admit of it, and the road will not be blocked, the quickest method is to halt and pile arms or dismount in column of march on or close off the road. This need not prevent individual units forming up in closer formation near the road. In choosing a place, the time of year and the weather are to be considered as regards shade, shelter from the wind or rain, &c.

Cooking during a march on account of the issue of provisions and getting fuel gives more trouble and takes more time than cooking in quarters or bivouac, where it has in any case to be repeated at the end of the march. Especially the want of water for cooking during the march may necessitate the troops forming up as completely as if going into a bivouac. Unless in the case of an exceptionally long march, necessitating its division, and consequently cooking, it is more advisable to complete the march, even if it should not be done before late in the afternoon, and to combine cooking with the night's rest.

All the arrangements for the end of the march, as the direction of the several units by the nearest way to their quarters, the issue of billets, the moving into bivouac, &c., must, if practicable, be so far prepared during the march that every unnecessary delay in affording repose to the troops may be avoided.

All arrangements for the march are dependent upon whether contact with the enemy is possible. If this is excluded, the march allows, as a pure route-march, of regard being had exclusively to sparing the troops fatigue. The more essential point is to march in small bodies or separate units and by the shortest roads from quarter to quarter; for the larger and deeper the columns, the more frequent and sensible will be the interruptions, and the greater the dangers from the heat. The latter especially may cause a route-march to be conducted by breaking up the force and marching in the smallest units.

The moment contact with the enemy becomes possible, all other considerations give way to readiness for action. This lies in the collection of the troops in large tactical bodies, in the order of march, that is, the succession of the troops on the march, in closer order if necessary, and in measures of security being taken. It will then be for the commander to decide what must be done on tactical grounds and what to preserve the forces of the men.

The manner of concentrating the troops for the march is decided not only by tactical considerations, but also by the strength of the forces. Large rendezvous offer the advantage of disposing of the troops until the moment of moving off of choosing between several directions for the march, and of arranging the order of march on the spot. They will, however, as a rule, only be adopted in close proximity to the enemy, which necessitates even during repose a close concentration; otherwise, they entail waste of time in marching to the rendezvous, and a wearying conversion into column of march again.

If circumstances permit, formation in small groups is desirable in the rendezvous, as, for example, taking an infantry division, one for the advanced guard, one for the leading regiment of the main body and the artillery division, and a third for the other infantry brigade. These and smaller groups can also be assembled in column of march on the road. Baggage, ammunition columns, and train must never interfere with the movement of the troops. Large rendezvous, which cannot be recognized with certainty by the map, must be reconnoitred beforehand, and prepared if necessary by marking the edges of ditches with stakes, &c.

The order of march of the troops told off to protect the column (advanced guard, &c.) will be decided by their leader, that of the main body by the commander of the whole, in which the judicious employment of the troops is of first importance. As a rule the infantry belonging to the same regiment or brigade as that with the advanced guard marches at the head of the main body, the artillery moves as far forward as its safety will permit; in regard to this it may be desirable with a very long artillery column to place a small detachment of infantry in the middle of it. The bulk of the infantry follows.

A day's halt is desirable after a long series of marches, not only for the rest of men and horses, but still more by the necessity for putting the arms and clothing in order.

Night marches may sometimes be necessitated by considerations regarding the enemy, or exceptionally in the very hot season. They are always inseparable from the disadvantage of exhausting the powers of the troops. If they have to be adopted, special attention must be devoted to every arrangement that will secure the uninterrupted march in the right direction being maintained in the dark. The principal among these are to provide for the connection within the column, to avoid fatiguing delays by clearing away or moving round obstacles, and to follow the right road. In the vicinity of the enemy the strictest silence must be maintained.

SHELTER FOR THE TROOPS.

The German term covers what we understand generally by encampments, the difference in the expressions arising from the fact that the German army does not carry tents. They trust entirely upon cantonments and the occupation of localities for cover on the march, resorting to bivouac only when those are not available. If the vicinity of the enemy, the numbers of the force, or the absence of large villages do not allow of accommodation in cantonments, the occupation of localities such as farms, and parks, gardens, &c., affords more shelter to the troops than simple bivouacs, while allowing the troops to be in an equal state of readiness.

In the immediate neighborhood of the enemy, when tactical considerations necessitate the troops being maintained even at night in a special position, or in the absence of any shelter from localities, the simple bivouac is resorted to.

CANTONMENTS.

If contact with the enemy is excluded, the comfort and supply of the troops is the main point, and they will be widely extended in the available quarters. The *ordre de bataille* forms the basis of the distribution, the mounted arms being divided amongst the others, so as to occupy quarters and stabling equally. On the march, the villages on and in the vicinity of the road will be more closely occupied. When in close proximity to the enemy, the troops must be kept together, and consequently the villages more closely occupied; the distribution will be ruled more by tactical considerations. *The occupation will be closer, infantry* will be strongly quartered in the places in the front line, the artillery more in the middle and never alone, and the cavalry further from the main road, the train being furthest from the enemy.

The headquarters and staff quarters will be as far as possible in the middle of their zones, near telegraph stations and large roads; care must also be taken that reports from the front as well as orders can reach them without going out of the way. When circumstances permit the course pursued in peace-time regarding the preparation of cantonments will be adopted. With large bodies the distribution will be arranged with the civil authorities, and the quarters prepared by quartermasters sent on in front. Even when the distribution is only ordered actually during the march, quartermasters must be sent in advance, or in the infantry mounted officers, if necessary, for it insures as a rule a more rapid settling down and earlier repose than if the troops arrive unannounced.

The issue of billets ensures regularity in getting into cantonments, and this will consequently be always done when time admits of it. Otherwise, a more summary procedure must be adopted, whole quarters being allotted to the several bodies, and streets and houses to the units composing them.

The senior officer of each cantonment acts as commandant. The generals and regimental commanders are entitled to nominate the senior field officer. He arranges for the distribution of the several bodies, for their internal duties, the external measures for security, and the state of readiness of the troops. If regular preparations cannot be made for the distribution of the troops in the cantonments, this will be done by an officer sent on in front, and it is desirable that he should be accompanied by the quartermasters. The several quarters must have limits that can be easily recognized, especially when closely occupied, regard being had to the alarm posts, and, if necessary, to the defence of the place. The artillery must always be in the vicinity of their gun-park.

A cantonment officer of the day is detailed (with large cantonments a field officer,) and officers for rounds will be detailed as required. Besides the cantonment officer of the day, each battalion, cavalry regiment, and artillery division furnishes one lieutenant, and each company, squadron, battery, and column, one non-commissioned officer of the day, for their respective units.

In each cantonment a main-guard will be established for internal duties. Its strength will depend upon the number of sentries required, which must be reduced to a minimum, especially when quartered during a march. Ordinarily, one on the colours and one on the wagons should suffice. If different bodies of troops occupy the same cantonment, each will furnish men to the main-guard according to the number of sentries it requires *for its own* protection. In order to economize the number, the wagons should be parked as far as possible together. Police considerations, an increased number of objects to be watched, the uncertain attitude of the inhabitants, &c., require an increased guard, and, if necessary, more than one. *The internal guards follow the procedure of ordinary garrison guards.*

In the neighborhood of the enemy, special outlying guards are necessary, which are pushed forward according to the danger threatened and the ground. The issue as well as important points will be occupied by double sentries. With mixed arms they will as a rule be composed only of infantry.

The instructions for picket duties will apply to the outlying guards.

The alarm posts to be fixed for every corps must be selected near the respective quarters, in such a manner that they can be reached promptly from the points occupied by the troops, and that the several bodies shall not hinder one another. The alarm post of the artillery, which must always be by the gun-park, should as far as possible be situated on the side furthest from the enemy.

Under certain circumstances it may be useful to fix upon alarm rendezvous, for large bodies, at which, on an alarm, regiments, brigades, &c., assemble without further orders. But it is advisable to limit this to those cases in which it can with some certainty be foreseen that the places of assembly selected are such as will meet the object in view.

On an alarm being given by the "Assembly" being sounded, the infantry form as quickly as possible, fully equipped, on their alarm posts. The dismounted artillerymen hasten to the gun-park and help the drivers to harness. The mounted men, the baggage and carriages must, especially for night alarms, be given special instructions by the commandant. If the enemy should have got into the place by surprise, those who cannot reach their alarm posts remain in their quarters, so as to barricade them and prepare to defend them with their fire.

In the vicinity of the enemy, cavalry in cantonments by themselves will provide against surprise by precautionary measures. In the event of surprise their cantonment guards can be dismounted, and carbine fire employed.

THE OCCUPATION OF LOCALITIES.

When large bodies are to be disposed of in localities, they are divided between several situated as near as possible to one another, on the same principles as in cantonments, and the portions detailed that are to be quartered in houses and farms, and those that are to bivouac in the gardens, courtyards, and neighbouring fields. The roads must not under any circumstances be utilized *for bivouacking.*

If the whole are to be quartered in the localities the measures of security towards the enemy, as well as the internal duties, will be the same as when in close cantonments. If portions of the troops bivouac in the vicinity, these measures will be extended according to the orders in regard to bivouacs. The advantage offered by the occupation of localities with large bodies have also disadvantages which must be counteracted by various arrangements to be made by the commander. Amongst these are the difficulties of arranging in the dark for the regular disposition of the troops in them, of preventing unauthorized requisitions, of arranging the water supply and all those circumstances which are inseparable from the concentration of large bodies of troops.

It is of great importance, in arranging for the quarterings of large bodies of troops in localities, that the necessary dispositions should be made before the arrival of the troops. For this purpose it is desirable that the senior officer should go forward, accompanied by an officer from each corps.

BIVOUACS.

The smaller the force and the less it is tied to a particular spot, the more advantageously can the bivouac adapt itself to the ground. The greater the mass of troops assembled in bivouac, the less can regard be had to choice of the ground. Respect for adjoining units leads to the limits of each unit being definitely fixed, and to the lines, the cooking trenches and the latrines, &c., being placed without special regard being had to the nature of the ground, the cover available, and the direction of the wind. The readiness of the troops for action also is not always ensured by the concentration of large bodies, for the difficulty of disposing the troops to meet an unexpected attack, especially in the dark, naturally increases with their bulk. When circumstances admit, therefore, it is advantageous to break up the larger formations into smaller groups for bivouacking purposes.

Apart from the troops detached for the purpose of security, advanced guards, &c., the *ordre de bataille* is followed. Artillery should always be joined to other troops. If large bodies must be assembled in a single bivouac, as large intervals as possible must be left, when the ground admits of it, between the different formations, both to facilitate interior order and to allow of the way about being more easily found in the dark.

The place of bivouac must be selected as early as practicable by the commander or his substitutes going on in front, and suit both as regards the tactical requirements and the comfort of the troops. The former influence the position and disposition of the bivouac, with a view to a rapid forming up or continuation of the march. If there is a question of the probable occupation of a position for defence, the bivouac must be situated only at such a distance behind this as will admit of it being occupied in time in case of sudden attack.

The bivouac must be withdrawn as far as possible from the enemy's view; good communications out of it must be considered and made if necessary.

The care of the troops requires, above everything, a sufficient and easy water supply, *dry ground, and as much shelter as possible against wind and weather.* Covered ground, such as standing crops, may be very inconvenient and is generally to be avoided. Meadows, although they appear to be quite dry, always harbour moisture and mist at night. One night passed on unwholesome, damp ground may cause more casualties than an engagement. Stubble or open wood offer, as a rule, the best ground.

The security, the internal arrangements, and the duties in bivouac are dependent upon the changing circumstances in regard to readiness for action, the care of the troops, and especially the nature of the ground. The following rules are (also in tents or hutments) of general application. The commander of the bivouac is responsible for arranging, according to circumstances, the appropriate measures, when a deviation from or addition to these becomes necessary. *As regards the latter, he is responsible for obtaining whatever materials* may be available (straw and planks for building huts, wood and underwood, &c.) *to provide shelter for the troops from the weather as quickly as possible.*

In the vicinity of the enemy, outlying guards are furnished to close the bivouac and protect it from attack.

The same rules generally apply to them as to the outlying guards furnished in cantonments.

Inlying guards serve principally for police duties; they are furnished from each unit according to the orders of its commander. Their strength depends upon the sentries to be posted, as a rule one on the commander and one on the colours for the arms.

The infantry bivouacs in company columns, which in battalion formation are side by side at ten paces interval. The front of the battalion occupies 250 paces, and the depth of the bivouac about 254 paces.

The cavalry bivouac in squadron columns wheeled up to a flank, the squadrons at half distance. The front occupies 150 paces, and the depth of the bivouac about 320 paces.

The artillery bivouacs in such a manner that the guns are in front line, with fifteen paces intervals; behind them come the carriages of the first relay (three ammunition and one store wagon). Further, in rear and equally in two lines, with fifteen paces interval, are placed the carriages of the second relay. Then come the horses, the men's equipment and packs, and after that the men themselves. A field battery occupies about 150 paces in front, and 220 in depth of bivouac. A horse artillery battery requires a similar front, but the depth is slightly greater.

In case of sudden alarm, whether from an unexpected attack, or if the "Assembly" and "Alarm" are sounded, the infantry (rifles and pioneers) hastens each man to his place by the arms, buckles on his equipment and pouches, and puts his helmet on. The putting on of the packs and unpiling of the arms follows on the command. The transport carriages are put to. The cavalry saddle as quickly as possible, put on their equipment and mount. The squadrons assemble at their alarm posts. The carriages will be put to.

Artillery (ammunition columns and train) saddle, harness, put on equipment, and put to the guns or carriages without further orders.

The inlying guards remain in their places until further orders or, if necessary, throw themselves on the enemy. The quarter-guards take charge of any material, &c., left behind, and in the case of a sudden march they only follow when everything is loaded up and ready to move.

As a rule the hour for breaking-up the bivouac will be previously ordered. In this case all fires will be carefully extinguished a quarter of an hour previously. The guards join their own corps — so far as this does not interfere with the continuance of the necessary precautions in the direction of the enemy — and the troops form up ready to march off. The whole of the carriages belonging to the troops remain in their places until they are ordered to move off.

REVUE DE CAVALERIE, MAY, 1888.

Major-General SOUCHOTINE, professor at the Staff Academy, delivered a very remarkable lecture last month at the officers' casino of the staff of St. Petersburg, on the organization of cavalry; the Commander-in-Chief of the Russian Army, Grand Duke WLADIMIR, Field Marshal Gen. NICHOLAS NICOLAIEWITCH, and many general and field officers were present. Gen. SOUCHOTINE is of the opinion that the rôle of cavalry in war has been greatly increased, and that the cavalry in consequence must be given an organization *en rapport* with the duty it will be called upon to render. He concluded by demanding: first, that the strength of the arm be greatly augmented; second, that large cavalry corps 12,000 strong be organized; third, that the number of squadrons be increased to ten per regiment; fourth, that for the service of exploration, and security, the patrols be increased to at least twenty men. These broad views were acquiesced in by all those present, says the *Invalide Russe*, from which this brief summary has been taken.

REVUE DE CAVALERIE, JUNE, 1888.

The *Armee Verordnungs-Blatt* of May 28th, publishes a cabinet order abolishing the cuirass in the Gardes du Corps and cuirassier regiments (except for parade purposes). These regiments will be armed with carbines, and the revolver will no longer form a part of their armament.

RECEIVED.

Manœuvres for Infantry, Principles and Forms. By Major W. R. LIVERMORE, corps of engineers, United States Army. (CHARLES SCRIBNER'S SONS, New York.)

The Modern American Pistol and Revolver — A Description of Those of American Make — Ammunition Used — Results Accomplished, and Shooting Rules Followed. By A. C. GOULD, editor of *The Rifle*, Boston. (A. C. GOULD & Co.)

When we read the comprehensive title of this book we expect something more than a description of modern pistols and revolvers of American make and their performances in target shooting. Though we feel some disappointment in not finding more of the deeds of the revolver chronicled, in field or foray, fight or brawl, in the hands of WILD BILL or H. B. FRENCH, we find the topics discussed to be presented in an interesting way.

We learn that the eight-inch bull's-eye has become so easy for good shots that it is reduced one-half at thirty yards and one-quarter at twenty yards, and that it is retained only at fifty yards and over; at these distances with these targets perfect scores are by no means uncommon. Few of the performances of the revolver at longer ranges appear to be of record yet. We note, however, that Mr. F. E. BURNETT on his first attempt with a 44-calibre Russian model SMITH & WESSON revolver made a perfect six shot score at one hundred and fifty yards, on a second-class target. The author predicts that similar scores will soon be made up to two hundred and fifty yards, and he informs us that officers in European armies have secured good results up to four hundred yards. As most wild game shooting (large and small) takes place within one hundred and fifty yards, it is hinted that the revolver may become a very useful sporting weapon.

The editor of *The Rifle* has shown such interest for the revolver that it must be a matter of regret that he has not taken up his subject in other phases. The defects of the weapon for rapid shooting we commend to his intelligent attention as well as the subjects of the history and possibilities of the revolver in war.

The Campaign of NAPOLEON. By JOHN C. ROPES, New York. (CHARLES SCRIBNER'S SONS.)

The Necessity of an Organized and Elevated Veterinary Corps in the United States Army. By ORLOFF SCHWARTZKOPFF, V. M. D.

EXCHANGES.

LIST OF PERIODICALS IN EXCHANGE.

Journal of the Military Service Institution.— Vol. IX., No. 33. March, 1888.

Our Northern Frontier — How to Feed the Soldier — Systems of Defense of the Principal Powers of Europe — Legal and Tactical Considerations Affecting the Employment of the Military in the Suppression of Mobs.

Proceedings of the United States Naval Institute.— Vol. XIV., No. 45.

Three Considered as a Tactical Unit — Velocities and Pressures in Guns.

The Guardsman, May 1888. Chicago.

The Rifle. Boston.

ENGLAND.

The Illustrated Naval and Military Magazine.— Vol. VIII., No. 48. June, 1888.

Military Problems — Rapid Field Sketching and Reconnoissance — The Conquest of the Punjaub — The Sikkim Expedition — A New Portable Hospital.

FRANCE.

Revue du Cercle Militaire.

No. 17, April, 1888: The Future of the Graduates of the Preparatory Military Schools — Mobilization of the Italian Army. No. 18, April 29, 1888: Training of Horses for Field Service and the Necessary Qualifications of the Cavalry Officer Now-a-Days — Account of an Imaginary War Between France and Italy. No. 19, May 6, 1888: General BODISTEANO'S Report on the Manœuvres of the Twelfth French Corps — Marshal MOLTKE. No. 20, May 13, 1888: The Trans-Caspian Railway — Effect of Torpedoes Upon Fortifications. No. 21, May 20, 1888: Military Pigeons in Italy. No. 22, June 3, 1888: The Russian Army in Turkestan. No. 24, June 10, 1888: The Foreign Military Press on the French Infantry Armament — Russian Summer Manœuvres of 1888. No. 23, June 17, 1888: The Hospital Corps of the Swiss Army — Instructions for Hasty Intrenchments in the Russian Army.

PRESS NOTICES.

The Epoch.

THE JOURNAL OF THE U. S. CAVALRY ASSOCIATION is the title of the latest addition to the ranks of monthly magazine literature. THE JOURNAL publishes much data concerning the great cavalry establishments of France and Germany, and it discusses such questions as "Sabers or Revolvers?" "Remounts," "Marching Cavalry," "Mounted Fire Action of Cavalry," etc. The articles are contributed by leading cavalry officers, who must be considered authorities on the subjects which they discuss. The U. S. Cavalry Association, of which THE JOURNAL is the official organ, has its headquarters at Fort Leavenworth, Kansas, under the presidency of Brevet Major-General W. MERRITT, U. S. A. Its design is professional improvement, and the advancement of the cavalry service generally. Its members are cavalry officers in active service, and former officers of honorable record. In addition to these, honorary members are elected from time to time from among persons distinguished in military or naval service, and eminent men of learning. Their number, however is limited to twenty. Thus far only eighteen have been elected, among whom we notice, General W. T. SHERMAN, U. S. A., Hon. J. C. ROPES, General LEW WALLACE, Governor FITZHUGH LEE, and Professor JEAN ROEMER, vice president of the College of the City of New York and author of *Cavalry, its History, Management and Uses in War.*

The Nation.

The initial number of THE JOURNAL OF THE U. S. CAVALRY ASSOCIATION for March has come to hand. It is well printed at Leavenworth, Kansas, and is good reading.

The Kansas City Times.

The U. S. Cavalry Association has issued its first JOURNAL and its appearance reflects credit upon the Association. It is of similar size to those issued by the Service Institute at Governor's Island, but is far superior in workmanship and quality of paper. Its contents are made up from a selection of papers read before the Association by a special committee appointed by the presiding officer, the names of the members of which are not made public. THE JOURNAL contains 140 pages of matter exclusively devoted to the interests of the Association. The remaining pages show a list of American and foreign military works which can be obtained through the secretary of the Association, besides many pages of advertisements from the best houses in the country.

The Leavenworth Times.

If the first number is a fair sample of what is to follow, the success of THE JOURNAL seems to be assured. The Association, its object and aim, and THE JOURNAL are all highly commendatory.

Army and Navy Journal.

"THE JOURNAL OF THE U. S. CAVALRY ASSOCIATION," the first number of which has just appeared, is a handsome magazine of 140 pages. This is an exceedingly creditable first number of a periodical which is destined, we hope, to have a long and useful career. No officer of any service could read the papers and the discussions which appear in THE JOURNAL OF THE CAVALRY ASSOCIATION without increased respect for the ability and the professional attainments of the officers of the American cavalry service.

Public Service Review.

A trumpet blast, sounding a rallying note, comes to the ears of American cavalrymen with the initial number of THE JOURNAL OF THE U. S. CAVALRY ASSOCIATION. For the first time in the history of our professional literature we have here a periodical devoted to the improvement of the Mounted Service and the prospect seems good for the preservation in an enduring form, convenient for reference, of the results of matured experience in the field, as well as a record of interesting modern experiment, for the future guidance of the cavalry world.

The issue of the handsome volume cannot but inspire the progressive officers of the army with fresh zeal and should prove an important recruiting agent for the Association.

The Guardsman.

THE JOURNAL OF THE U. S. CAVALRY ASSOCIATION made its *debut* in March last, and will be published from time to time as may be deemed advisable. The number before us contains ten papers on subjects of general interest to all branches of the service and the members of the Association include the most prominent officers of the army.

Proceedings of the U. S. Naval Institute.

JOURNAL OF THE U. S. CAVALRY ASSOCIATION. Volume I, No. 1, March, 1888. The first number of this journal, published by the Association at its headquarters, Fort Leavenworth, Kansas, comes to us replete with useful and interesting information for the cavalry branch of the army. It contains also the Constitution and By-Laws of the Association, which in their main features resemble very closely those of the Naval Institute. The JOURNAL appears in a very neat and appropriate dress, and the publication committee are to be congratulated upon its handsome appearance. We predict for the Association a prosperous career. C. R. M.

Army and Navy Gazette, (London).

THE JOURNAL OF THE U. S. CAVALRY ASSOCIATION for March is the first issue of a publication intended to appear from time to time, and to contain a selection of the papers read before the Cavalry Association of Fort Leavenworth, Kansas. Several contributions in the present part have reference to the arming of cavalry. There are other good papers on marching, remounts, French cavalry, dismounted service, &c.

Journal of the Royal United Service Institute, (London).

JOURNAL OF THE U. S. CAVALRY ASSOCIATION. Volume I, No. 1. March, 1888. Page 125. Price 50 cents. This is the first issue of the JOURNAL of the U. S. Cavalry Association at Fort Leavenworth, Kansas; and its contents show that the U. S. Cavalry are as anxious as that of any other army to keep in touch with the times. The New York agent for sale of the publication is BRENTANOS.

Revue de Cavalerie — No. 39. June, 1888. BERGER LEVRAULT, et cie. Paris.

The cavalry of the army of the United States though not large, has its *organ* also, like the French and Italian cavalry. It is not a review, properly speaking, but the journal of the association of American cavalry officers; it has no regular date of issue, but is only published when sufficient matter has been collected to form a number.

The future publications, judging from the initial number, will be replete with interesting matter. In the latter, now before us, there is an article on the organization of the French cavalry, a study on remounts, some views on the employment of fire arms by mounted troops, &c.

Let us hope, that in time, this journal will give us some historical information on the employment of cavalry in the war of secession, a subject which it is pre-eminently able to handle; and that this attempt of our comrades beyond the sea may meet with all the success it deserves, is our heartfelt desire.

MEMORANDUM.

At a meeting of the Cavalry Association, at Fort Leavenworth, Kansas, April 7th, 1888, the following resolutions were unanimously adopted:

Resolved: That the thanks of the Association are due, and are hereby tendered Maj. W. BOERUM WETMORE, life member, for a complete set of illustrations by DETAILLE, DE NEUVILLE, MEISSONIER, and others, of the Franco-German War, presented by him to the Association.

Resolved, That the Secretary of the Association forward a copy of the resolutions to Maj. WETMORE.

O. L. HEIN, *Secretary.*

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1888.

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VOL. I. NOVEMBER, 1888. No. 3.

JOURNAL

OF THE

United States Cavalry

ASSOCIATION.

LEAVENWORTH, KAN.
STEAM PRESS OF KETCHESON & REEVES
1888.

JOURNAL

OF THE

UNITED STATES CAVALRY ASSOCIATION.

VOL. I NOVEMBER, 1888. NO. III.

SHERIDAN.

"As a commander of troops, as a man capable of doing all that is possible with any number of men, there is no man living greater than Sheridan. I rank him with Napoleon and the great captains of history. He had a magnetic quality of swaying men which I wish I had."—U. S. GRANT.

WITH these words for text and with cavalrymen for readers it ought not to be difficult to write fluently of him who for years was the leader of our choice. It is not the lack of material; it is not the want of information that bids one pause. Who of our Association is there to whom the story of SHERIDAN is not "familiar as household words"? What man of all our number has not felt the thrill of exultation, the glow of soldierly enthusiasm in reading or recounting the campaign of the Shenandoah or the nine days grapple from Dinwiddie to Appomattox? It is the sense of incompetence — the dread of total failure to treat the subject with half its just desert that causes pen to halt and tongue to falter. It is as though the sparrow had been set to sing the praises of the nightingale — the terrier to laud the strength and valor of the lion.

And yet, who that ever lowered sabre in salute to that keen-eyed leader or served with him in either peace or war, can withhold his tribute to the soldier of all others between whom and the cavalry there throbbed

the living link that only Death has severed? Men whose lips are seldom opened, troopers whose silence is a by-word in their regiments, and old campaigners to whose eyes tears were strangers until they heard the wail of "taps" that August afternoon at Arlington—all yield to the potency of the spell. The magnetism that swayed whole armies in his vehement life still triumphs over the grave, and pulses thrill and fading eyes rekindle and tongues unloose at mere mention of the days when he rode forth to stem the torrent of disaster or lead the way to glorious victory. What cavalryman can sit in silence when comrades bid him speak of SHERIDAN?

Some years ago there came to the writer a letter from an accomplished officer of the German War Academy at Berlin in which, speaking of FREDERICK CHARLES—"the Red Prince"—it said: "He always kept in his own room a portrait of STUART, your great raider, and was wont to refer to him as the greatest cavalry general of modern days."

It is not an estimate to cause surprise, coming as it does from one of the soldierly HOHENZOLLERNS, reared in the traditions of the Prussian Light Cavalry and imbued with the teachings of ZIETHEN and SEIDLITZ; it is not a sentiment held only by the whilom leader of the old RUDORFER—"the Red Hussars"—and cherished as gospel truth throughout the South. Three years of hard campaigning had taught the Army of the Potomac a world of respect for the plumed cavalier who led the Southern Horse on many a wild raid around its flanks and rear; cutting its communications, burning its trains, blowing skyward its reserve ammunition, feasting at its sutler's expense, "swelling" in its generals' uniforms, playing the mischief everywhere and always getting back unscathed. Sixty-One, Sixty-Two and Sixty-Three went by—year after year of humiliation to our arms despite the resolute stand at Gettysburg along an almost perfect battle line—a stand made possible, by the way, only by JOHN BUFORD and his stubborn troopers who barred the westward pikes and held on "fighting like the devil," indeed, against the thronging advance of LEE, until the rearward infantry could come up and reach it undisturbed. From first Bull Run through all the campaigns that followed—the Peninsula, Cedar Mountain, Fredericksburg, Chancellorsville, Mine Run—what aggression was there on our part that bore not its fruit in disappointment or disaster? What were Antietam and Gettysburg but stubborn, stand-up fights—superb indeed in courage and devotion, yet ineffective in one great quality, as battles from which the foe retired unpursued, leaving our leaders to thank GOD for that much luck and content to let well enough alone? What was the sentiment of the mass of the Army of the Potomac but an echo of the sneer which HOOKER levelled at the corps he knew not how to use: "Who ever saw a dead cavalryman?"

What was the status of the mounted force of the army in Virginia, despite its dashing charges at Beverly Ford, its heroic stand at Seminary Ridge? It was well nigh friendless, with all its eagerness and daring. It had to suffer though, year after year that cruelest of soldier woes—the consciousness of being utterly misunderstood, if not of being utterly sacrificed. Small wonder that it heard with apathy of the two new men, called from western fields to lead the hitherto unlucky Army of the Potomac. Small wonder that the younger of the two, he who had been chosen as the new commander of the cavalry, should hear in answer to his question of General MEADE the words, "Well, never mind about STUART; he'll do pretty much as he pleases anyway."

With this as the ruling faith at headquarters, with the commander of the Army of the Potomac entertaining and expressing the view that it was useless for the Union cavalry to hope to thwart their opponents, it was but a natural consequence that, throughout the great array of foot—thanks to HOOKER'S sneering epigram; thanks, partially, to the lack of independent leadership; thanks, too, to the lack of faith at headquarters—there had grown up that deeply-rooted theory that the cavalry was of no account. There dropped a pall upon the corps when BUFORD died and the man had not yet come to lift it.

Whosoever may have been at fault, whatever may have been the cause, certain it is that the troopers of the eastern army had enjoyed but little luck in those three years; certain it is that throughout the Army of the Potomac, despite Brandy Station and Beverly Ford, despite Gettysburg and STONEMAN'S raid, despite BAYARD and "GRIMES" DAVIS and FARNSWORTH and ULRIC DAHLGREN, there was still afoot that covert sneer: "Who ever saw a dead cavalryman?"

"I want a man to organize and command the cavalry of this army," was one of the first things GRANT said to the President after reaching Virginia. "It demands energy, vim, dash, enthusiasm," he went on to explain, and HALLECK named the man. "The very one I was thinking of," said the new General-in-Chief, and so it happened that the little, black-eyed soldier, whose division was foremost in the rush on Mission Ridge, was summoned to quit the men who had learned to love and follow him, to cut loose from the plucky westerners, who had long since "sized him up" after their own fashion, and report for duty with the Army of the Potomac.

Soldiers would not be human if they observed without comment that the two most important posts were now to be filled, not by selections from their own generals but by strangers from the west. No wonder, therefore, that SHERIDAN should have felt reluctance at leaving his fighting division and the prospect of speedy command of the corps, to take up the sword among strangers who might resent his promotion over the leaders

they had known. But misgiving implied no hesitancy, he obeyed at once, and from that instant dates the turning of the tide. From the day of his coming the cavalry had their guidons fluttering ever in the foremost line and victory and triumph perching on their standards. HOOKER's slur was flung in his teeth, MEADE's mournful prophecy turned to naught, and STUART — he who time and again had circled our hosts, laughed at our futile counterstrokes and burst through our bewildered lines — STUART had led his last raid. In their first fierce grapple at Todd's Tavern the southern leader found he had met his match at last and recoiled stunned and shaken, and then when the glad order came to "cut loose and make for the James," the horsemen of the Army of the Potomac leaped to the front under a leader whose soul was in his work. In two days he had reached the railways and ripped them up for miles. In vain STUART flew at his rear and strove to make him turn from his purpose; in vain he raced him to the very walls of Richmond, and still more in vain, with fatal impulse, he charged at Yellow Tavern. When the sun went down the Southern Horse were scattered to the winds, the Union guidons were flaunting in the very teeth of flurried Richmond, and STUART, cavalier and bold raider, had flashed his sabre for the last time; the flower of Virginian chivalry had gone down before the fierce leader from the West, and he who had indeed "done as he pleased" for three long years had met his fate in three short weeks of SHERIDAN.

That one campaign wrought wonders for the cause of the nation and the good repute of the cavalry, but it was but prelude to the deeds that followed — the raid up the Virginia Central, the dashing attack on HAMPTON and FITZ LEE at Trevillian, the relief of ABERCROMBIE at White House on the perilous return, the sharp fighting across the Peninsula and then — then with the news of EARLY's repeated triumphs in the Valley of the Shenandoah and his rush at the walls of Washington, then, at last, the order that gave to the man who led and fought and handled cavalry to the admiration even of the Army of the Potomac, a separate and an independent command.

Who can recall the crisis of that summer of '64 without a shudder? Sixty thousand of our best and bravest *hors du combat* in the series of desperate battles from the Rapidan to the James, and still between GRANT and Richmond were the undaunted lines of LEE. EARLY had swept the Shenandoah and was thundering at the outer lines of our capital, the nation despondent, the peace party clamoring for summary stop to the war; "Copperheads" openly jubilant; gold soaring to 2.90; the Secretary of the Treasury resigning in dismay; the white-haired but weak-kneed editor of the *Tribune* pleading for concession; a presidential election close at hand, and the campaign orators proclaiming "The war a failure" and urging the claims of the Democratic candidate and the overthrow of a Union loving administration. One more disaster to the national arms might mean the death-blow of the Republic. The triumph of the South meant the dissolution of the Union — a divorce that is but the prelude to speedy disintegration.

It was in this crisis that SHERIDAN, despite his youth, despite the timorous protests of STANTON and HALLECK — who thought he might handle cavalry but couldn't command a department, forsooth — it was in this supreme moment that SHERIDAN was ordered to go in and win on a field where hitherto none had "gone in" but to lose. FREMONT, BANKS, MILROY, MILES and HUNTER, all had tempted their luckless fate and come out worsted. The Valley of the Shenandoah up to August, 1864, was but the valley of humiliation for the Union arms — a broad and welcoming thoroughfare for the passage of the soldiers of the South whensoever it pleased them to tramp that way. JACKSON and JUBAL EARLY, STUART and ASHBY, marched hither and thither as they pleased, but JACKSON had met his soldier death in the moment of supreme triumph at Chancellorsville; STUART, who rode "monarch of all he surveyed" until that western trooper came, had found his grave before the guidons of the Union cavalry. 'Twas time for JUBAL EARLY to take heed: a man of mettle such as the Shenandoah had not yet seen had come to try conclusions with him.

Why dwell upon it? Who *can* describe the thrill of hope, of almost incredulous delight, with which all loyal hearts waked from their despond at the tide of triumph that came surging up with the news from the Shenandoah? Hardly had the nation dried its tears — tears of gratitude over SHERMAN's capture of Atlanta — when there came that marvelous despatch from Virginia We were used to news of victory from the West. We looked for it; expected it. It was here — here in front of our ever-threatened capital we craved success and had ever been denied it. "Wait till they tackle LEE and STUART," croaked our cynics, "then you'll see how your western generals will go under. Wait till old JUBAL EARLY gets his grip on SHERIDAN and you'll see how he'll drop his tail." There had been a few weeks of suspense; there was strained watching and waiting in hope and fear and fervent prayer, and then, sudden as the leap of panther, the furious blow; then that marvelous despatch, electric in effect, vivid, pulsing with soldier spirit, telling of glorious victory on the very fields where all before had been disaster, telling — wonder of wonders! — of EARLY driven back "whirling through Winchester," with our sabres at his heels.

How the joy bells rang and cannon thundered! How that new name flew from lip to lip. "SHERIDAN — SHERIDAN — Cavalry SHERIDAN" everywhere! How loyal men and loving women joined in praise and blessing and thanksgiving! No laggard he! No general such as we had

seen too oft before, wiring the tidings of success where success was sometimes a vivid lie, or halting after partial victory to receive congratulations. The thunder of the salvos had not died away before there came the second jubilee—another fight; another triumph; another wild scramble up the valley. EARLY whipped again from his chosen vantage ground at Fisher's Hill. The loyal North went wild with joy forthwith and the centre of despond was shifted then and there from Washington to Richmond, where the southern mob in derision seized the guns hurried forward to replace those lost along the Shenandoah and lettered them: "General SHERIDAN, care of JUBAL EARLY."

Then how the croakers changed their tunes! How the Copperheads slunk to their holes! How the hindering hands of old fossils at Washington clacked feeble applause at mention of this young general, of whom but a month before they could but mumble, "Too inexperienced; too impetuous; too immature." Those were the counsellors who would have buried GRANT under the comprehensive accusation of being "a drinking man," until that marvel of a president struck them dumb with the unlooked for answer—"I wish I knew where he got his whiskey," and the intimation that there were eastern generals whom it might benefit. They found brief comfort in the tidings that LEE had gone to see EARLY and brace him up for further effect. They began to nod their wise old pates when SHERIDAN was reported falling back, but the people went wild a third time over the cavalry fight at Tom's Brook, where our troopers turned like tigers on their foe, chasing them "on the jump" full twenty miles.

Then—then came Cedar Creek. "It never would have happened if I'd been here. Face the other way, boys; we'll lick them yet!" Where—where in the annals of modern war was ever victory snatched from disaster half so grave? What can parallel that sunset triumph following such ghastly rout at dawn? NAPOLEON, beaten back from the walls of Marengo, had utterly lost the field when greeted by the welcome voice of DESAIX 'Twas DESAIX who fell upon the Austrian flank, strung out in the ardor of the chase, who turned pursuit into panic and won the day. 'Twas his strong division that marched from early dawn to save the wreck hurled back from the banks of the Bormida. Marengo was NAPOLEON'S disaster—DESAIX'S great victory, but the tide at Cedar Creek was turned by no shock of fresh battalions, 'twas met and stemmed and checked, then lashed and driven by a living force in the spirit of one daring and indomitable man, and that man SHERIDAN.

> "He dashed down the line 'mid a storm of huzzahs,
> And the wave of retreat checked its course there, because
> The hand of the master compelled it to pause."

Thank God for "the swift hoofs thundering south" that day! Brave and determined as was the final stand of the men who had not left their colors, bold and ready and eager as were the troopers of MERRITT and CUSTER, there was none until he came to order, and above all *inspire* the counterstroke that whelmed all before it, retrieving all that was lost, seizing guns, battle flags and whole battalions, turning national disaster into glorious victory, all just in the nick of time

November brought to the young general the double stars in the regular service—the nation's tribute to the trooper who in thirty days had won three pitched battles, sixty guns in open field, half a hundred battle flags and more prisoners, if EARLY is to be believed, than EARLY had men. Most effectually had he employed the little time he took "to settle this new cavalry general."

STUART, honored in his soldier grave, EARLY, relieved and degraded by his own government, the Southern cavalry scattered and dispirited, the Shenandoah freed at last and for all time, hope and faith restored to the Union, respect and confidence established between the cavalry and so much of the army at least as served in the Shenandoah, these were some of the fruits of SHERIDAN'S achievements in the Valley where victory had perched only on southern flags before he came. Once more the nation's heart leaped high with hope, and then with prayer and patience awaited the lapse of the slow dragging winter, the coming of the glad and budding spring—the coming of the end.

But if SHERIDAN had been equal to every emergency before, what can one say of the part he played in the great and final campaign? Things had not been going blithely in the bomb-proofs and trenches before Petersburg through the black and dreary months of winter. Just as plucky, just as skillful as ever were those half-starved foemen in the tattered butternut or gray. Let a head but show itself above the logs and there came a shot. All through the besieging lines the tendency to stalk erect and carry high the martial front seemed to have fallen into disuse; a slouching gait was becoming prevalent as better befitting the peculiarities of the situation. Men consumed their rations, went on picket, talked about the mine fiasco and strolled over and paid curious visits to the Sixth Corps, back from SHERIDAN and the Shenandoah, and then returned to their own camp fires and stirred up the latent cynicism of their comrades by repetition of what WRIGHT'S fellows had to say about "Little PHIL" and the cavalry. All the long winter they had been hugging those breastworks, learning to set rather too much store on shelter and probably getting soft and bilious, and out of condition for lack of exercise; and so when the end of March drew nigh and the news flashed from camp to camp that PHIL. SHERIDAN with all his bold troopers had ridden down the James from the upper valley, ripping and tearing things as he came, and was now crossing at City Point, was it not natural that there should be some apparent jealousy as the whole army roused up to have a

look at them. What a ride that was when the cavalry corps, bronzed, tough, elastic, ready for anything after three months in the saddle, trotted around the rear of the encircling infantry, following the lead of that red and white, swallow-tailed guidon! How the woods rang with chaff and billingsgate! How the Second and Fifth Corps whooped and cat-called! How the Sixth sprang to their feet and cheered and shouted welcome and recognition to many a favorite officer or regiment! How full of fight, how full of confidence and self-reliance they looked as they jogged along, laughing at their jeers from the trenches! "Oh, we've got a feller that can fight all around you mud crushers," was the reply of a Michigan trooper to some blatant detractor; "Come out of your rat holes and we'll learn ye how." Time had indeed changed. The horsemen had found out what it was to campaign and fight under a born cavalryman and it was their turn to lord it in the Army of the Potomac.

Who has forgotten the gloom and ill omen that attended the opening moves of the days that followed — the march by the left flank into the thick and boggy forests wherein lay Dinwiddie and Five Forks and the coveted line of the South Side Railway? Roads all deep with mud and mire, woods all adrip with pouring, pelting rain, clouds hanging in chilling masses, obscuring the very light of heaven, horses floundering to their bellies, mules plunging to the roots of their ears in quicksand, wagons capsized, caissons stalled, officers and men wet, bedraggled and ominously silent! Who was there around headquarters that first dismal night to say one word of hope or cheer to the grave, indomitable General-in-Chief? Aye, were there not corps and division commanders who hung around, counselling retreat, preaching of disaster, urging "Back to the trenches," and when the great commander looked to his second as though for some expression of hope or confidence, is it not history that even loyal MEADE was silent and depressed? What gleam of light, what word of soldierly pluck or cheer, what scintilla of encouragement did GRANT find in all his array until, back from the distant front, covered with mud, dripping with rain, but bubbling over with energy and fight, bristling with eagerness and enthusiasm, came SHERIDAN — SHERIDAN to protest that all was going well; to beg for orders to push ahead; to urge that we "should end this thing right here"? What wonder GRANT could never forget the magnetic force of his great subordinate! All headquarters seemed illumed — all athrill with the trooper's glowing spirit. If ever for an instant thought of "giving up" obtained it vanished then and there at the soldier voice of SHERIDAN. *On* was the word; *on* the deed, and with the early, misty dawn the troopers had plunged boldly into the unknown wilderness before them, striking for the South Side rails, and LEE had hurried forth one-third of all his force to surround and crush the man who had downed his best and bravest.

Even then LEE failed. Where were troopers ever better handled? Where were horsemen ever more skillfully, pluckily, daringly, fought than in that long day's grapple with the guns, the carbines, the rifles of thronging Confederates, while SHERIDAN was slowly slipping out of the meshes they had woven for him, falling steadily back towards Dinwiddie and luring the Southern left into its counter snare? How the guidons clung to every copse and thicket, stinging like hornets the charging foe! How every ridge, every fence, every ditch and tree and stump and fallen log was manned and held by plucky skirmisher, while the trumpet calls rang through the misty forest aisles and the smoke wreaths veiled the tree tops, and the supporting lines trotted hither and yon, giving ground only when orders came and dashing in with whirling sabers at every open glade! How MERRITT'S tried regulars and CUSTER'S "Wolverines" battled all day long against combining arms of a gallant foe! How CROOK and GREGG and DEVIN backed them in every rush or cheered with every charge! When at last the sun went down behind the veiling clouds every standard, every guidon, was in its place, though many a gallant bearer had fallen. SHERIDAN bivouacked his men around Dinwiddie and set his trap to spring with dawn upon the Southern force, whose efforts had been all unsuccessful.

Then came the glad morrow with sunshine and supports. Not as he hoped — not as he deserved, 'tis true — but even in his disappointment that a night march had been too much for foot troops who had done no marching in so long a time — even though he chafed over the escape of PICKETT from the snare he planned, there was still time before the sun went down to plan and fight another battle.

Then came the crowning proof of his skill and brilliancy in the field. The Shenandoah had demonstrated his ability to handle foot as well as horse, but here, against the veteran infantry of LEE, intrenched in the heart of a Virginia forest, he dared to assault the front with long lines of dismounted troopers, while to the Fifth Corps was assigned the easier task of turning the flank. Tactically no more brilliant battle had been planned or fought on the soil of Virginia, and for the cavalry 'twas a glory greater even than Winchester. MERRITT'S "impetuous charges" from the south, CUSTER'S headlong dash at FITZ LEE on the western flank — these and all their work that April afternoon he left to his skilled subordinates. He and the cavalry knew each other thoroughly and with them he had but to order — they obeyed. It was the infantry that needed the inspiration of his presence and with them he rode into battle. Who that saw him that memorable day will ever forget the picture? SHERIDAN dashing in among the foremost ranks of the wavering footmen, his flag gleaming in his hand, shouting, cheering, swearing in wrath at the skulkers, raging at the nerveless advance, reckless of hissing lead or bursting shell, furious

at the needless delay, and finally, the incarnation of battle, by the very force and vehemence of his nature, hurling the men of AYRES' division on that fire-flashing parapet and doubling up the Southern left even as MERRITT's men came leaping over the breastworks along the front. Five Forks was SHERIDAN's crowning fight and the death-blow of the Confederacy.

And still he was not done! Recall the matchless energy of the pursuit — the race on parallel lines to Appomattox, the searching raids of his troopers through every lane and by-path, the incessant dogging of the Confederate flank, the daring stand of his foremost brigades across the front of the now starving and desperate foe, the wild dash at Farmville and Sailor's Creek, the capture of all supplies, the sleepless vigilance, the relentless hammering. Who — who in all our army from Chieftain down could match him in energy or excel him in purpose? What man of all our leaders, when at last the worn and wearied foe surrendered, had done so much to bring that foe to bay as he whose troopers blocked all hope of escape — "SHERIDAN, the inevitable."

Late in the month that followed, when the armies of the Union passed in final review at Washington and shared a triumph such as CÆSAR might have envied, when the broad avenues rang with martial music, the blare of bugles and the tramp of serried columns, when all the Capital was fluttering with the colors of the flag, and joy and thanksgiving beamed on every face, when many a noted general was greeted with acclamations from every side, there were still two circumstances that tempered the universal jubilee. The people could not forget — could not but miss the kindly, homely, patient and pathetic face of him whom GOD had spared only long enough to guide the nation through a storm such as it had never yet encountered, and then be stricken down at the very entrance of the harbor where all was peace and safety. They mourned the absence of the tall, commanding form of him who having been ever "constant in our ill," could not now be with them, "joyous in our joy." They looked with eager eyes, but all in vain, for another form — for the keen black eyes and the bronzed, swarthy features of the greatest cavalry leader of the age, the soldier whose deeds had aroused the whole nation from its despond and kindled a flame of enthusiastic homage in every heart. "Where is SHERIDAN?" "When are we to see him?" "Why is he not here?" These were the cries on every side.

No triumph for him while stern duty called him from afar. Even as his great commander and his comrades of the East and West were receiving the acclamations of hoarse-throated throngs in Washington, turning his back on all the sweet reward of soldierly achievement, SHERIDAN was speeding to the Rio Grande. Not until the last armed foe was conquered could our leader rest. Not until long years afterward, not until he had

reached the pinnacle of his ambition — the highest rank in the army — the very zenith of his fame; not until his name had been carved enduringly on the lasting monuments of the ages and spoken in praise by soldier tongue in every land; not until as citizen and as man he had developed those traits which won him honor and esteem from a people who gloried in his battle deeds; not until he had still further strengthened the ties that bound him to the cavalry — sharing danger and privation with us in the snows of wintry campaigns, joining us in march and bivouac in the heat and thirst of summer suns, guiding us in many a stirring gallop on the Indian trail, showing by word and deed his faith in the corps he led to victory; not until throughout the length and breadth of the land no name was better known than his, and spoken by no loyal voice except in honor; not until the hearts of all our people were drawn to him through the brave and patient abiding of a mortal struggle, and the old admiration of his soldier pluck and spirit kindled anew at the heroic fight he made against the only foe that ever downed him; not until all this and far, far more had been achieved, did SHERIDAN come for his triumph to the Nation's Capital.

Fairer day sun never blessed; clearer skies or bluer waters never smiled above or reflected back the white walls of the thronging city. Under the deep foliage of the fringing trees, bare-headed, silent, reverent thousands lined the broad avenues along which he rode. All the great dignitaries of State were in his train; all the great soldiers of the nation followed the wheels of his triumphal car — that sombre, flag draped caisson. Guidons of his faithful horsemen, banners of the fed artillery, crape-twined, bowed above the helmets of his escort; solemn strains of martial music rose and fell in mournful cadence as with muffled tread we bore him on. Up the broad thoroughfare with its bordering ranks of sorrowing faces, white and black, over the graceful arches that span the blue Potomac, through the winding aisles to Arlington we followed our old commander, halting at last where the declining sunlight slanted down that beautiful green slope. At its crest the stately portico of the old Virginian mansion, and the roadway, ranked with silent troopers; at its base the fringe of thick-leaving trees, through whose foliage came the glint of arms and the scarlet colors of the batteries; beyond them the broad, peaceful valley, the winding sweep of noble river; beyond them all the gleaming white shaft of the distant monument, the shimmering dome of the Capitol, all bathed in August sunshine. Near at hand a silent, reverent group of uncovered heads, from whence there rises presently the chanting ritual of the Church of Rome. The solemn service is soon complete; the reverend clergy fall slowly back, the Loyal Legion sadly take their last look upon the shrouded form of their honored Chief, and then — then tears gush forth from eyes long unaccustomed, and strong

men bow their heads or turn aside as, with tender care, a soldier's daughter, a sorrowing woman, is led away from the grave of him who was her hero and her pride. Down beyond the trees there is a quick, yet noiseless, movement, then the earth trembles with the sudden concussion; gun after gun the battery booms its parting salute to the General-in-Chief. A few low-spoken words from the aides-de-camp and the throng falls back to the very crest; the smooth green carpet of the slope is now one great unbroken square, save for that narrow cleft in its fair surface, bordered by those ridges of new-turned clods. Another stir and rattle down beyond the trees and then as suddenly the leaves all leap and quiver as a flashing volley shoots aloft — another — another, and the pale blue clouds come drifting slowly up above the foliage, and then — last scene of all — there appears at the head of the grave one silent, statuesque, solitary form, clad in the full dress uniform of the trooper. A moment's pause until the echo of the final volley has died away in the distance and then he raises the trumpet to his lips. Soft, tremulous and low as we have heard it many a time in windy nights on the far frontier, and in mountain bivouac in the old campaigns, the first notes of "taps" float out upon the hushed and pulseless air; then louder, throbbing, wailing, well-nigh passionate, it thrills through every heart — a sobbing requiem, the trooper's one adieu to cherished comrade, then, sinking, fading, falling, it slowly dies away and all is done.

Aye, though statesmen, soldiers, priests and delegates thronged to take their part in the mournful ceremonies of the day; though from far and near were gathered the nation's highest names, the closing rite of all is paid by the hands of those whose sabres he had led to fame and victory: the cavalry bade the last good night to SHERIDAN.

C. K

A HORSE ARTILLERY GUN.

BY FIRST LIEUTENANT A. D. SCHENCK,
2d U. S. ARTILLERY.

IN the first number of this JOURNAL there appeared an article under the caption of the "New Field Artillery Gun and Carriage," in which the idea is boldly advanced that "from its lightness it is suitable though not especially designed for horse batteries." The idea that any gun not especially designed for horse artillery purposes is suitable therefor, must from the nature of things, and the practices of every military nation, be denied absolutely. The services required of horse and field batteries are quite distinct and widely separated in their character. It need hardly be specified that in one, mobility is of vital importance, without which a horse battery possesses no value to a cavalry leader; in the other, power of fire is of the first importance, as field batteries have less trouble in keeping pace and place with the movements of infantry, while power and volume of fire are required to meet inanimate as well as more powerful animate obstacles. Without this virtue the infantry commander has little use for artillery. In field batteries both of these elements can be, and frequently are combined, and in several nations a single gun is made to do duty for a single battery which performs the functions of both light and heavy batteries. But in no nation is the same gun designed to do duty as both a horse and a field gun. Everywhere the horse artillery gun is especially and carefully designed and constructed for this particular service alone. The reasons for this are perfectly obvious. The services required must first conform to the demands of the cavalry commander. His all important requisite is, that a horse battery shall under no reasonable circumstance impede his marching and manœuvring abilities, and further that in keeping pace with his arm the horses of the artillery shall maintain as good condition as those of the cavalry. In other words, that in a field of operations practicable for horse artillery its mobility shall be fully equal to that of the cavalry. Naturally the power of the gun is a matter to which he gives less consideration, as celerity of movement is the secret of his power. By this means he gains his position, and par-

ticularly requires of his artillery that it shall get there with him, leaving the power of the gun and the method of fighting it to the artilleryman.

In horse artillery, then, the matter for first consideration is manifestly that of mobility. What its measure should be is not a matter of doubt, although it varies considerably in different armies, owing to the conditions of country, its roads, horses, and the manifold special requirements of the service in general; each country being governed by what particularly exists therein. In general the measure of mobility for horse artillery purposes is determined by the usually conceded power of a horse.*

LOADS PER HORSE FOR HORSE ARTILLERY.

Nation.	Gun.	Caisson.	No.	Rounds.	
				In Limber.	Per Gun.
U. S. 6-pounder	531 lbs.	582 lbs.	6	50	200
U. S. 3-inch Rifle	535 "	580 "	6	40	160
Austria	570 "	713 "	8	40	152
France	583 "	675 "	9	29	160
U. S. 3".2	604 "	736 "	9	30	160
Russia	635 "	787 "	9	30	165
England	656 "	763 "	6	36	148
Germany	660 "	690 "	8	38	154

While there is considerable difference as to the measure of mobility in European services, there naturally exists a wide one as compared with what has been deemed necessary for our own. That our predecessors thoroughly understood our requirements, and adopted wise measures to meet them can hardly be denied. These conditions remain practically the same, and there is no apparent or valid reason for our departing from them. Most certainly is this true if we are to accept as the marching possibilities of cavalry, those fixed by General MERRITT in the same number of the JOURNAL. The limit of load of 570 pounds per horse is based upon the ability of a good horse under favorable circumstances as to condition, to draw a load of 1,100 pounds twenty-three miles a day at most, and here comes the General with the very positive assertion that "experience in marching cavalry commands in this country establishes the fact that the distance laid down by Europeans as a forced march for that arm (twenty-five miles a day), is no more than well-marched cavalry can accomplish for six days in every week in a campaign." The General may be accepted as an authority, and if such marching as is here indicated is to obtain in the future the necessity for at least maintaining our old measure of mobility for horse artillery, admits of no discussion.

*See "Matériel for Field Artillery," by the author, *Journal of Military Service Institution*, September, 1888.

After making all due allowance for such marching with possibly a small cavalry command only, it must at once be conceded that we have absolutely no room for any increase in the weight behind our teams. In fact, if General MERRITT intends to have us understand that such marching is within the powers of large cavalry commands, a division, or even a brigade, it apparently becomes a matter of grave consideration whether it be not in order to reduce the old measure. If there be any increase it becomes obvious that the horse artillery will at once become an incumbrance to such a leader, consequently he will have none of it. It may here be well to call attention to a fact in connection with this limit not generally considered even in this country. The ordinary conditions of service and ability to secure forage, etc., enables the cavalryman to maintain the condition of his horse much more readily than can the artilleryman, especially of his team horses, even though the former be more constantly active, this very fact most frequently working to his advantage in this respect. As this condition of the horses is the matter of most vital importance to the efficiency of the battery, it was deemed necessary that the weight of the carriage should be within limits, in order that a small reserve of grain might be carried upon it, and thus in a measure secure equality with the cavalry.

It would thus appear that the conditions of the service of horse artillery with the cavalry are exceedingly rigorous in limiting the weight of the carriages. But when those connected with its services with infantry have been duly considered, the limiting conditions are, if anything, even more stringent. An inspection of the organization of a modern army reveals the fact that one-half or more of the home batteries serve with the infantry. Their chief function is to accompany the attack of that arm, to form points of support for the flanks of the assaulting body if successful, or from its flanks to cover temporarily the position gained if it can be held, or to cover the retreat if necessary. Such batteries are held in reserve until the proper time, and then have to cover 1,500 yards or more under fire in the shortest possible time. In times past the horse battery with its cannoneers mounted on their horses could go into action at short range with little or no danger from musketry fire. This is all changed now, and the battery may be under a heavy fire from this arm from the very moment it breaks cover. To have the cannoneers mounted upon their horses is only to increase the size of the target, and whenever a horse goes down, possibly to leave a cannoneer behind. Such an advance occupies but four or five minutes at most, but within this short time may be bound up results of the utmost moment. The battery of the present is literally stripped for the fight, the guns are accompanied by probably only three caissons, the lead teams of the others with a man on

each horse are taken along to replace disabled horses, which from numbers alone, as well as from position, will be lead or swing, more than two to one. To insure a gun detachment being with the gun for its service when it comes into action, and to aid in quickly replacing disabled horses during the advance, two cannoneers are carried upon the gun-limbers and three more upon the off horses, and with all of these precautions the battery commander who promptly gets into action with four or five of his guns and men enough to efficiently serve them, will be in good luck.

The horse batteries of advance or rear guards, whether of the cavalry or corps service, meet with numberless circumstances when it is advisable to not only retire most of the caissons, but the horses of the cannoneers also, in order to secure reasonable safety from loss through the killing or disabling of the horses. The character of this most important service necessitates frequent, and often sudden and rapid changes of position, where the only way to transport the gun detachment is by the means indicated.

The two men upon the gun-limbers weigh at least 300 pounds, and thus reduce the weight for a gun carriage equipped for service to 3,120 pounds, or 520 per horse, and this too under the further unfavorable condition that every horse in the team has to carry a man. Hence it is seen that the horse batteries serving with the infantry are, if anything, more rigidly restricted as to mobility than those with the cavalry. This restriction is not so constant in its application. But the measure of efficiency is the supreme test of battle. The battery may go for twenty years with fifty pounds per horse less weight than is ordinarily permissible, but it does this in order that, at the decisive moment, it may cover the 1,500 yards within the few moments necessary and in a manner to insure effective service.

It thus becomes apparent that, whether we are to meet General MERRITT'S requirements as to marching abilities, or those of a corps or army commander for celerity of movement and efficiency upon the battle-field, the measure of mobility is rendered exceedingly stringent, so much so in fact that if it be not perfect, the result is inevitable and absolute inefficiency, and consequently the battery will be worthless for horse artillery purposes, and neither the cavalry nor the infantry commander will have any use for it. Both will be deprived of what is now everywhere held to be one of the most valuable commands which a modern army brings upon a battle-field. To the cavalry assigned to the duty of destroying bridges, communications, etc., it has, since the advent of machine guns, become absolutely indispensable, as without it a bridge, for instance, covered by block houses or other slight defences and protected by machine guns, could bid defiance to any cavalry unaccompanied by a much more powerful form of artillery. But here again comes up the ever present

necessity for perfect mobility. Such raids will be made by small bodies of troops, naturally seeking to move by unfrequented and generally anything but good roads, and the natural consequence will be to put the powers of the artillery to the severest test. Its failure will mean that of the cavalry, and the result will be that they may have just cause for damning the artillery for a generation to come.

Now as to the suitability of the 3".2 gun for horse artillery purposes. Possibly it has been made to appear that the question of mobility is one of very considerable importance in connection with the efficiency of a horse artillery gun. At least that has been the intention. In the article alluded to in connection with this gun, no mention is made as to weight, other than that it is such as to permit of its use for horse artillery purposes. It is a matter of no little interest to know upon what authority this statement is advanced. The weights of the gun and carriage are incorrectly given and compared, with those of foreign guns. But the weight of the element, either gun or caisson — the mobility, does not appear, and is left to conjecture. The very fact that this gun was not especially designed for this particular service, when as possibly may have been seen, the requirements are so rigid in their nature, would at once prove the gun to be a failure.

From the Reports of the Chief of Ordnance it appears that the gun weighs 800-804 pounds, and the carriage complete 1,300, of which latter sixty are for the seats which are not required for a horse artillery gun. From the Report of 1885, the limber-body weighs 405 pounds, wheels 200, old wooden chest 185, projectile (proposed but doubtful as this would be in the line of decided improvement) 13.5, charge 3.5 pounds, and with thirty rounds in the limber we will have:

Gun	800	pounds,
Gun carriage, complete	1,240	"
Limber, complete	990	"
Ammunition, thirty rounds	510	"
Equipments, water buckets, etc	28	"
Paulin	54	"
Total	3,622	pounds,

or 604 per horse, eighty-four more than the limit. In fact, it is within sixty-two pounds of the 3,684 fixed in the light artillery tactics as the weight permissible for a light field gun, and to which weight the old 3" rifle was only brought after adding 106 pounds for the seats for cannoneers, and not only increasing the weight of the shrapnel to 10.5 pounds, but increasing the number of rounds in the limber to the enormous sum of seventy-two, a number never heard of for a light field gun of the date, but of course quite practicable if a horse artillery gun has to be used as a light field gun. The same practice if followed in any European service would result in about doubling the present number of rounds carried in

the limber. To bring the above weight down to the proper limit of 3,120 pounds will necessitate removing every round from the limber. Two blank cartridges might be carried therein, serving as a very forcible illustration of the practical value of this gun for horse artillery purposes. That this weight, so greatly in excess of what has heretofore existed for our service, is permissible or can be tolerated, is simply absurd.

But this is not all. The caisson has also to be considered, and its weight will be found in the Report of the Chief of Ordnance for 1885, page 667:

Body, complete (no ammunition)	1,632 pounds.
Limber, complete, packed (30 rounds)	1,782 "
Total	3,414 pounds.

Here we already have reached the limit of 570 pounds per horse, without a single round in the caisson body. With nine caissons to carry 160 rounds per gun, will necessitate packing fifty nine (it is constructed to carry eighty, with which imagine the load) rounds in each caisson body, which would bring the weight up to 4,417 pounds, or 600 more than our heaviest caisson during the late war, and over 900 pounds more than that for the old 6 pounder or 3" rifle.

Verily was this gun not especially designed for horse artillery purposes.

Place these facts — and they will be found as cited — before General MERRITT or any other cavalry leader down to the last troop commander, and not one of them will have anything to do with such horse artillery. With such a gun — such measure of mobility — the artillery cannot hope to join services with the cavalry under any circumstances however favorable. Over good hard roads the gun might possibly, for a time, keep in sight of a cavalry column marched at the rate General MERRITT indicates, but the caisson could not possibly do so; while over poor roads or none at all, even the guns would have to be sent to the rear as utterly impracticable.

The conditions precedent are all well known and thoroughly understood, and the conclusions are obvious So far from the conditions being widened in scope by the requirements of modern service, exactly the reverse obtains, and no more conclusive reasons for the members of this Association need be assigned than General MERRITT has given in his paper. It must appear quite evident that any horse battery commander who joins the General's command will find the condition absolute, that he maintain his place in the column of march, and at the same time the good condition of his horses while so doing. That this cannot be done with a measure of mobility less perfect than that heretofore obtaining in our service, or less perfect than that declared by the accepted rules from the conceded power of a good horse, requires no demonstration. The

horse batteries for infantry must be the same as those for cavalry, even if the conditions of their service should not practically reach the same end.

The reasons for these lamentably unsatisfactory results for the 3".2 gun are plainly to be seen. First of all it may be iterated that no gun for horse artillery will or can be expected to give such results, unless it be especially and carefully designed and constructed for this purpose alone. With an excessive charge of powder, caliber and length of bore, the new gun, fired with great pressure in the bore, gives an excessive recoil, to control which that most pernicious "novelty," the recoil brake was introduced and a 200 pound wheel resulted. The inertia of such a wheel, coupled with the fact that the brake almost instantly brings it to a dead-lock and adds the friction against the ground, of course bent any reasonable axle that could be made. Thus, instead of bringing into play the terrible strength of the metal and tying the ends of the axle to the trail as is the foreign and common sense practice, (thus securing the maximum strength with the minimum weight) just the reverse obtained and another "novelty" was introduced by spreading boiler-plate along the length of the axle to give it strength and rigidity. Such a practice no good mechanical engineer could endorse, and the proof of its viciousness lies in the fact that with the same track the carriage-body proper for the German 3".46 gun, which has to stand almost exactly the same strain as that for our gun, weighs 174 pounds, or 28 per cent. less than the carriage-body for the 3" 2 gun. In this connection it may be noted as a matter of no inconsiderable importance that this foreign gun fires 4.5 pounds greater weight of projectile from its light carriage than we do from our so much heavier one, and this foreign projectile also gets out to a range of 4,500 yards with 50 per cent. greater energy than our insignificant one does.

To sustain the assertion as to the recoil-brake it is only necessary to consider the subject of the wheel. The Archibald wheel is unquestionably far better in every way and especially stronger than the old one, and with the aid of aluminum bronze, or brass — three times as strong as the old — it can be greatly improved in these respects. But no reasonable wheel could stand the strain of this recoil-brake and the pressure in the bore which it tempted the use of.

With nine caissons of the old pattern there will be seventy-seven wheels in the battery, to each of which twenty pounds have been added, instead of a reduction — a reasonable expectation in view of the improved qualities of the new wheel. This involves the loss of 1,540 pounds outright for the battery. The new limber-body weighs 405 as against 335 pounds for the old one; loss 1050. The caisson-body equipped but without wheels 1,032, as against 961 for the old one; loss 639 pounds. The gun-carriage equipped but without wheels weighs 840, as against 598 for the old one; loss 1,452 pounds. To offset this enormous total we have

the reduction of thirty pounds in the weight of the gun; total 180, leaving a net loss of 4,501 pounds, equal to the weight of 265 rounds, or forty-four per gun. And this, be it remembered, in face of the fact that we are supposed to command not only the best material but the best wagon makers in the world. Comment is unnecessary, in fact no one could do justice to the subject.

It is generally an easy matter to criticise, but not always so easy to suggest proper remedies for defects. In this case, however, the remedies suggest themselves. First of all and as a matter of course, it is again repeated that as a horse artillery gun, far more than any other, must meet the requirements of a special service, restricted within very narrow though well-defined limits as to conditions, it must be especially and carefully designed and constructed to meet them.

In so doing the pernicious recoil-brake must be banished absolutely and beyond recall. Then natural conditions will have to obtain as with the man and his musket. If a high pressure and long bore must be resorted to for a given weight of gun, the caliber must be small and *vice versa*. From the nature of the action of this brake the wheel of necessity must be abnormally strong and heavy.

Within the whole problem of the construction of field artillery material there is no single item which at all begins to compare in importance with that of the wheel, and to make this clear to any mind it is only necessary to consider the number and weight of these in a battery. First as to the proper weight of a new wheel. The Archibald Wheel Co. maintain that their wheel is from twenty-five to fifty per cent. stronger than those of the old pattern, weight for weight. The use of aluminum bronze, or brass, will greatly increase the limit. But we can take the weight of the Russian wheel, 151 pounds, and assert that a fifty-five-inch 150 pound wheel of proper tread will meet our requirements. This at once saves to us fifty pounds each for seventy-seven wheels, or 3,800, which can go into the limber-chest in the shape of ammunition and not be trundled around in the shape of ponderous wheels to carry almost empty chests. Again, the experience of our war demonstrated the fact that six spare wheels were too many for a battery. In these days of shrapnel fire two will prove an ample supply when those carried with the ammunition train have been considered, and we gain 1,050 pounds for seven wheels discarded, and, say 455 for the discarded spare axles. In other words, this change in the weight and number of this single item saves to us the enormous total of 5,355 pounds for a battery, the equivalent of 315 rounds or fifty-two per gun, which is now hauled around in the shape of a useless and unnecessary weight of wheel, only made a necessity by the use of this vicious recoil-brake.

Unquestionably the objection will at once be raised that such a wheel will not hold the gun, neither could any semblance of a man short of a graven image withstand the shock of the present Springfield rifle fired with 120 grains of powder and its 500-grain bullet. Recoil-brakes could not be clapped upon the man, and the charge and pressure in the bore had to be regulated accordingly. Now that the magazine gun is recognized as a necessity and consequently the soldier must carry a greatly increased number of rounds to meet its increased expenditure of ammunition, not only must the weight of the individual round be reduced but some of the weight must come out of the musket and go into the cartridge-box in the shape of cartridges. At the same time, possibly, a much higher pressure in the bore must obtain, and this with a lighter gun, which means simply that the caliber must of necessity be reduced until, for the desired pressure, the work of recoil is reduced to the limit of the endurance of the soldier; precisely what must be done in the case of a suitable and necessary wheel or carriage-body. Such a wheel probably will not hold this 3".2 gun with 3.5 pounds of powder and 34,000 pounds pressure per square inch in the bore, and with the pernicious recoil-brake applied. That such a wheel is of paramount necessity is beyond question, and to secure its use requires that the present conditions be modified accordingly, just as in the case of the new rifle.

With the old "brutal powder" the maximum pressure in the bore of the 3" rifle is given in the Light Artillery Tactics as 50,000 pounds per square inch, with which the strain upon the carriage was 83 tons. Thanks to the powder maker—to whom, by the way, more than anyone else is due the great improvement in modern guns—we can regulate the pressure at will. With 34,000 pounds pressure the 3".2 gun gives a strain of 75 tons, due to the extreme calibre and length of the gun, and the preposterous weight of the carriage as compared with that of the gun. Why it requires a 1240 pound steel carriage to stand a less strain than a 958 pound iron and wooden one stood, is because of these conditions, and further because the wheels are locked down and the lighter gun is enabled to play the part of a hammer in knocking the almost immovable carriage to pieces. A 3" gun weighing 800 pounds mounted on a carriage similar to that for the old 3" rifle, but with 150 pound wheels and a suitable brake, with a pressure of 30,000, would give a strain upon the carriage of only 51 tons, or 32 less than the old carriage could withstand. When this 3" rifle was designed to replace the old 6 pounder, the weight of the carriage was left unchanged, and this notwithstanding the fact that the problem involved an enormously *increased* pressure in the bore, and greater length of the same, and further also that to insure a sufficient number of the much heavier elongated projectiles, the weight of the gun had to be diminished, which meant more unfavorable conditions for the

carriage, as the heavier the gun the greater its inertia and the less the strain transmitted to the carriage. To insure the safety of the latter the calibre of the gun had to be reduced from 3".67. The new conditions determined that the calibre required to insure safety to the carriage should be about 3".

We have very similar though much more favorable conditions for the conversion of the 3" rifle into a modern breech-loading horse artillery gun. First and most important of all we can reduce the maximum pressure in the bore to 30,000 or at most 32,000 pounds per square inch. Although increased length of bore is necessary, the less the better for the artilleryman, both as to general conditions of service and as to the recoil. Better material will enable a considerable reduction in the weight of the gun to go into the projectiles required, but the less of this reduction the better, as the 3" rifle is already lighter than the carriage, and well known principles of mechanics require that the gun should be at least as heavy as the carriage, or as much heavier as possible. By suitably regulating the tread of the wheel to secure proper traction upon soft ground—on the road there will be no trouble—its diameter can be reduced at least two inches, to fifty-five, and by the aid of aluminum bronze, or brass, three times as strong as the old metals, we can construct a wheel weighing 150 pounds or less, which will be stronger and better in every way than the old one. We can also slightly shorten the trail, and thus secure increased strength with less weight. The calibre remaining the same, three inches, with a much heavier charge, weight of projectile and length of bore, the recoil will be so much increased that it can no longer be neglected as was the case in the change from the six pounder to the 3" rifle, although, as has been seen, the strain upon the carriage will be reduced thirty-two tons. A brake of some kind becomes necessary—not the present recoil brake which is good for nothing else, save to increase the weight of material and render a good gun an impossibility—but an ordinary brake, suitable for instant and constant use upon the road or when the gun is in battery. Its application when the gun is fired will call upon the carriage for a certain amount of strength to meet this condition, but there are thirty-two tons excess of strength to its credit. This may be drawn upon for the purpose of limiting the recoil. But right here let it be perfectly understood that this credit is not to be overdrawn under any circumstance. To do this means increased weight, which is out of the question. If this credit be not sufficient to limit the recoil within proper bounds under the conditions suggested, then our man, our carriage, is being taxed beyond his strength and the conditions must be modified accordingly, until he makes no complaint. We can stand a somewhat greater recoil than that for the old 3" rifle, *provided always* that the weight of projectile, and its remaining velocity and energy are sufficient

to compensate for the increased evil, but we cannot afford to put 235 pounds additional weight into the carriage for the sake of a 13.5 pound projectile, and to limit the recoil to seven feet after the method used with the 3".2 gun.

The artilleryman does not expect to eat his cake and have it. A reduced charge, calibre, length of bore and an ordinary brake may not reduce the recoil to the limit secured with the 3".2 gun, but it will be brought within reason, and with that we will have to rest content, and will so do if the remaining velocities, weight, and energy of projectile are satisfactory at battle ranges.

A round for the 3".2 gun weighs seventeen pounds, of which 3.5 is for powder, a deal too much in a field gun for the weight of projectile, or in a horse artillery gun under any condition. By taking 2.75 pounds as the charge, which is a reasonable one for a horse artillery gun, and the remaining 14.25 pounds for a projectile, good ballistic results are assured, or at least far better than for the preceding case. Allowing twenty per cent. for the loss of power by the absorption of heat by the gun, etc., a charge of 2.75 pounds will give to this projectile 1,482 f. s. I. V., and at 4,500 yards 746 f. s., with 55 f. t. of energy. The 3".2 gun with I. V. 1,670 f. s. and a 13.5 pound projectile gives at the same range 694 f. s. and 45 f. t. The shrapnel for the latter is to contain 157 bullets, thirty-two to the pound.

That for the former, with the reduced pressure to which it is to be subjected (and if as well made as the German and Italian shrapnel), will contain 5.6 pounds of bullets. With the increased velocity at the maximum range this could be reduced in size to about forty-four to the pound and still be as effective as the larger ones for the present gun, while the shrapnel would contain 246 bullets. Our shrapnel is simply the wire-cartridge or other form of concentration which the sportsman uses to secure at long ranges game of less dangerous character than the modern soldier. Like the sportsman we first determine the size of our bird, the bullet necessary to bag him; then regulate our "pattern" accordingly. If we take the size of a man in ranks at eight square feet and require say two hits to disable or kill him, then the pattern for the 3".2 gun must be regulated so as to cover at mean range a circle whose area is 628 square feet, with a diameter of twenty-eight, equal to fifteen files of infantry, which is the measure of the dangerous space along the front of a body of men, the crest of a parapet, etc. To this, of course, must be added the distance from the point of shell burst in the direction of fire, at which a bullet will inflict a dangerous wound. This latter is generally under modern conditions, of much less importance than the former. In the case of the other projectile the area of the pattern required at mean range will be 984 square feet and its diameter about thirty-five, equal to

twenty files. If our man takes to cover and gets behind a rifle pit or other like cover, as he is very apt to do, we can only get at him by increasing the angle of fall for our shrapnel, and must have recourse to high-angle fire with reduced charges.

The remaining velocity at 2,750 yards will give the same penetration at 100 yards to bullets say seventy to the pound, as that at 4,500 yards will give to those forty-four to the pound. Within this shorter range the smaller bullets will be effective, and the shrapnel will contain 392 bullets, *i. e.*, we shall stand an equal chance for bagging the smaller as the larger bird. This will give three kinds of projectiles, but our old time batteries carried four, and we can do the same if necessary. The projectiles should be regulated, not to a fixed weight of powder but to such quantity as will *insure the standard initial velocity with a uniform service weight for all projectiles.* Not a difficult matter, but without which we cannot obtain the maximum accuracy of fire, and more especially the maximum effectiveness with time fuzes, upon which so much of the usefulness of field artillery now depends.

A comparison of these two projectiles reveals the natural and apparently astonishing results which inevitably follow when a proper value for $\frac{d^2}{w}$ has been obtained. A suitable value for this factor will always insure, for any gun, the best ballistic results, and having all the conditions most favorable for the artilleryman, while a bad value will inevitably insure poor results, no matter what may be the conditions, and in the very nature of things they must be those most unfavorable to him.

It is not necessary to have an elevating screw of sufficient weight to raise a house, nor to have it fitted with a gear as complicated as that of a steam capstan. The weight of that for the 3″.2 gun is out of all reasonable proportion to the work it ought properly be called upon to do.

The propriety of selecting the *French*, instead of the *wedge* fermeture for a field gun, and especially for a horse artillery gun, is a matter of grave doubt. By far the larger number of artillery officers favor the latter, and they are probably right.

A suitable brake which can be used at any moment upon the road or in firing the gun to check the recoil, is a *sine qua non.* Without one, any field gun should be condemned at once The members of this Association have to deal with horses, and can fully appreciate the absolute necessity for the preservation of their good condition at all times. Not one of them, nor would any teamster or freighter in America, start upon a campaign with a wagon unprovided with this absolutely indispensable requisite. In fact it would be next to impossible to find such a wagon in this country. It is not the steep and difficult descents which have so much to do with the very serious evil of sore necks upon the artillery wheel horses, nor is it the weight normally thrown upon the pole straps, but the constantly recurring little pitches along the road which do not call for—will not admit of the use of the lock-chain. These, far more than all other causes, produce this evil and the only prevention is a suitable and practicable brake, similar in its nature to that found upon any work wagon in this country. It may not comport with the "handsome and graceful appearance of the carriage," may require a slight additional weight, and it may be somewhat in the way of the cannoneers; but the cannoneers can be trusted to take care of themselves, and to get along as well as those of other nations; while the matter of weight will be made up from that of the recoil-brakes and the lock-chains, etc. For especially steep or difficult descents the prolonge is always at hand, and one or both wheels can readily and quickly be securely locked, should the brake prove to be insufficient in power. With a horse artillery gun the brake would have to be used by the wheel driver, in the same manner as with the freight teamster; the line to the brake lever would, however, have to be provided with a snap-hasp, to be detached and fastened to the chest-handle or other convenient place when the piece is unlimbered. For use upon the road the recoil brake is utterly impracticable. It will securely lock a wheel, but that wheel cannot possibly be unlocked without halting the team and running back the carriage in order to release the brake, and as we are here dealing with horse artillery, this necessitates the dismounting of some of the cannoneers. It is desirable to secure the opinion of General MERRITT, or any other cavalry commander as to the utility of a battery for rapid marching, (no matter how perfect it may be in every other respect) when handicapped by such a state of affairs as this recoil brake insures. It may be claimed that at least one man had to dismount to release the old lock-chain. A sufficient answer is that the carriage did not generally have to be halted even then; and that all old time freight wagons had to use the lock-chain, whereas all are now provided with the modern brake. It is here reiterated that there is nothing connected with the 3″.2 gun carriage so pernicious as the recoil-brake; not even excepting the method of strengthening the axle by spreading a lot of boiler-plate along its length. So long as these twin evils are permitted to exist, we will never have a satisfactory field carriage, nor one at all to be compared with the best results obtained by foreign artillery engineers. Undoubtedly we shall have a "novelty," as this combination has been aptly designated, but this novelty will remain a mechanical absurdity as a means to an end where lightness of weight is undoubtedly the greatest factor. If any one doubt this fact, let him state the conditions and submit the designs of this carriage, together with one of KRUPP'S, to any mechanical engineer in this country and secure his professional opinion. It is no plea in extenuation to claim that the tie-rods would be in the way of the cannoneer. This would not hold, even if the rods served only the single pur-

pose of supporting the axle; but they also serve another, of almost equal importance, by furnishing points of support for the brake, without which the matter of securing a suitable one would be, by no means, so simple.

The removal of the pintle from its old position near the axle to a considerable distance in rear of it is simply going back to the old evils our predecessors tried to mitigate or avoid. This change only provides a lever for whipping the pole around in every direction, and the further the removal the greater the evil, and *vice versa*. The pole can just as readily be balanced, either by properly placing or by packing the limber chest, as by the aid of the trail. The matter of limbering or unlimbering is one of no consequence. Once the cannoneers get their hands upon the limber they can quickly and readily do either with their eyes shut. The artillery during our late war had to campaign over some exceedingly rough country, encountering an unusual number of stumps and rocks, but it usually got there. And it would have done so just as readily had the diameter of its wheels been fifty five instead of fifty-seven inches. As to the "turning angle" about which so much is said. Let anyone mark out upon a smooth drill ground with one of the old carriages, its turning-angle, then select the best drivers he can find and with a team of only four horses and no greater gait than a good square trot, see how near the carriage can be made to come to its turning-angle. There will be no doubt as to its sufficiency. For extraordinarily tight places the drill manual instructs that the carriage be unlimbered, when it can readily and quickly turn in any space in which the team can be doubled and the pole swung around. The new limber body weighs seventy pounds more than the old one, and there can be no possible reason for this increase save the change in the position of the pintle. This is equivalent to four rounds of ammunition for each limber, and as there are two and one-half per gun, the loss is ten rounds per gun. It is submitted that no possible virtue resulting from such a change, can compensate for such a loss as this.

The problem of the construction of a suitable field gun is in its nature similar to that of constructing a musket for a soldier. A given weight is available which must be divided between the gun and its ammunition and the means of carrying it. With the field gun the number and weight of the rounds being determined and the limber constructed to carry them, the remainder goes for the gun-carriage and the gun. A man has a limit of weight and strength — of endurance to resist the recoil of his gun, which, together with the conditions under which it is fired, must of necessity be made to conform thereto. Just so for a good substantial carriage. For a given track, etc., the weight and strength are limited, and it requires no argument to prove that, just as with the man, the gun and the conditions under which it is fired must in this case be made to conform to the conditions precedent. Had this been so with this 3".2 gun, we should

have had a good gun, but whether a horse or field gun it would have been a very different one from the present one. No better illustration can be cited than the one already alluded to, the change from the old 6 pounder to the 3" rifle. Here we have the fact that in this change the constructor not only had to face the difficulties of a longer bore but the vastly greater one of the enormous increase of 15,000 or 20,000 pounds per square inch pressure in the bore, and at the same time secure a greater weight of metal in the limber. He derived no such substantial advantage as now exists by the use of an Archibald wheel, with which greater strength, if necessary, is insured with a considerable reduction in weight. He could not gain forty-six pounds by a reduction in the weight of the implements and equipments, as can now be done. He had not the advantages now afforded by modern material and mechanical skill, whereby not only is greater strength insured but with a substantial reduction in weight also. Yet, notwithstanding all of these disadvantages, his gun, with forty rounds in the limber, weighed just twenty-five pounds more than the old one. This, with sixty pounds greater weight of metal in the limber, fifty per cent. greater weight of projectile, and the effective range more than doubled, to say nothing of greater accuracy. The weight of the carriage-body was not changed by a single pound, while the weight of the paulin, equipments, etc., was forty pounds greater than for the old gun. The recoil of the new gun was unquestionably greater than for the old one, and no effort was made to control it, but its virtues were so many and so great as to entirely overshadow the evil of recoil.

It is insisted, and it is believed, with justice, that in the conversion of the 3" rifle into a modern breech-loader for horse artillery, that this example of most successful conversion be followed. If a steel carriage cannot be constructed of the same weight, but greater strength, then the old one ought to be retained. A brake will require a weight of fifty-five pounds, but as an offset there is a reduction of forty-six pounds in the weight of implements no longer required, and about twenty more in the lock-chain, sponge-hooks, handspike rings, etc., leaving an actual net gain of eleven pounds for a new carriage. The diameter of the wheel can be reduced to fifty-five inches, as in the German and Russian (Austrian fifty-four, French fifty-six and one-half, and Italian fifty inches), and the weight reduced to 150 pounds or even less. The Russian wheel of the same diameter weighs 151 pounds, and serves for all field carriages, whether the 3".43 horse and field guns, or the 4".19 position gun, and for the caissons, weighing, without cannoneers 4,722 pounds. The Archibald Wheel Co., with the aid of aluminum bronze, or brass, can make a stronger and better wheel of this diameter and weight than any Russian ever saw, and one moreover that will be stronger than the old pattern wheel of 180 pounds which was used for the old horse artillery guns.

Such a wheel conceded, and it must be if we are to have what we want and ought to be given—we need go no further, though it is but reasonable to suppose that some further reduction in weight can be secured in the limber, and caisson bodies, chests, etc., and by discarding the foot-boards which are not required for horse artillery carriages, and in fact ought to be discarded if for no other reason than to prevent the men from making them harboring places for unauthorized weights. But without considering these, or changing the weight of the gun from that of the 3″.2, and allowing seventeen pounds for the weight of a round as fixed for that gun, we should have:

Gun (caliber three inches)	800	pounds.
Carriage-body	540	"
Brake	55	"
Two wheels	300	"
Prolonge, implements, etc	21	"
	1716	
Limber-body	335	"
Two wheels	300	"
Chest	185	"
Ammunition, packed (thirty rounds	525	"
Equipments, water buckets, etc	28	"
Paulin	54	"
	1427	3143
Old 6 pounder, fifty rounds	3185	"
3″ rifle, forty rounds	3203	"

Weight of metal in limber, 6 pounder, 300; 3″ rifle, 360, and the above 427 pounds.

With nine of the old caissons but provided with brakes the above weight of wheel, two only carrying spare-wheel and axle and 160 rounds per gun, the weight of a caisson fully equipped for service will come within 3,420 pounds, or the limiting load of 570 per horse.

That such a gun and conditions, or others very similar, are entirely practicable, admits of no reasonable doubt. It would be especially designed for artillery service and would meet the conditions required therefor.

When the caliber of the 3″.2 gun, its weight, etc., are compared with foreign guns, it is found to fall, not as the Ordnance Board asserted it was intended to, viz: between a horse artillery and position gun, but between a horse and a light field gun, and between these two stools it naturally falls to the ground, not good for either purpose.

A suitable value for $\frac{d^2}{w}$ would give a projectile weighing about fifteen pounds, with which this gun would be a very good one—of its kind. The projectiles for the best horse artillery guns weigh a little over twelve pounds, and for the best light field about eighteen, the mean being about fifteen pounds. Thus the fact established by the calibre, would be emphasized by a proper projectile; the 3″.2 is simply a "mean" gun between horse and light field, as compared with those in use by the military nations of the world. That it was not especially designed for horse artillery purposes, and can never under any circumstances be made to meet the conditions required for such a gun, is a fact so obvious as to be beyond question or doubt.

"SHERIDAN'S EXPEDITION AROUND RICHMOND MAY 9–25, 1864."

By MAJOR LOUIS H. CARPENTER,
5th Cavalry, Brevet Colonel U. S. A.

THE crossing of the Rapidan May 4th, commenced the campaign of 1864 in Virginia. The battles of the Wilderness followed on May 5th and 6th, and on the night of May 7th, the army marched around the right flank of LEE's line and pushed for Spottsylvania Court House, only to find that the Confederates had beaten in the race and were in possession, necessitating a desperate contest in that vicinity. During these movements our cavalry had encountered the mounted force of the enemy in severe conflicts: on the 5th, at Todd's Tavern and the Furnaces; on the 6th, at the Furnaces and on the 7th, at Todd's Tavern, a second time.

On the 8th of May General SHERIDAN received instructions to cut loose from the Army of the Potomac, pass around the enemy's flank, attack his cavalry and line of communications, and, if necessary, go to the James River and obtain supplies from General BUTLER, who was then at Bermuda Hundred.

As a preliminary measure the cavalry was concentrated near the plank road to Fredericksburg at SILVERS' and ALDRICH'S plantations on the evening of the 8th.

The Corps consisted of three Divisions, aggregating about 9,300 effective men, and was organized as follows:

First Division.—Brigadier General WESLEY MERRITT, three brigades.
First Brigade.—Brigadier General GEORGE A. CUSTER.
Second Brigade.—Colonel THOMAS C. DEVIN.
Third Brigade.—Colonel ALFRED GIBBS. (This brigade consisted of the 1st, 2d and 5th Regular Cavalry, the 6th Pennsylvania Cavalry and the 1st New York Dragoons, and was known as "The Reserve Brigade").

NOTE.—General SHERIDAN was assigned to the command of the Cavalry Corps of the Army of the Potomac early in April, 1864.

Shortly after this event his staff was fully organized with Lieut. Colonel JAMES W. FORSYTH (now Colonel 7th Cavalry) as Chief of Staff, and I was detailed as one of the additional Aides-de-Camp.

Second Division.—Brigadier General D. McM. GREGG, two brigades.
First Brigade.—Brigadier General H. E. DAVIES.
Second Brigade.—Colonel J. IRWIN GREGG.
Third Division.—Brigadier General JAMES H. WILSON, two brigades.
First Brigade.—Colonel GEORGE H. CHAPMAN.
Second Brigade.—Colonel JOHN B. MCINTOSH.

The 6th U. S. Cavalry was detailed as escort for General SHERIDAN, as the regiment was much reduced in numbers, having lost heavily in the Gettysburg campaign.

Several regiments of cavalry were left behind to perform escort service and to guard trains and prisoners. Three troops of the 5th Regular Cavalry were at General GRANT's headquarters. The 3d Pennsylvania was at headquarters of the Army of the Potomac. The 4th New York and 5th New York were guarding trains and prisoners.

The Brigade of Horse Artillery.—Captain JAMES M. ROBERTSON, 2d U. S. Artillery, Chief of Artillery.
New York Light, 6th Battery.—Captain JOSEPH W. MARTIN.
2d United States Batteries B and L.—Lieutenant EDWARD HEATON.
2d United States Battery D.—Lieutenant E. D. WILLISTON.
2d United States Battery M.—Lieutenant A. C. M. PENNINGTON.
4th United States Battery A.—Lieutenant RUFUS KING, JR.
5th United States Batteries C and E.—Lieutenant CHARLES L. FITZHUGH.

The batteries were assigned to divisions as follows: WILLISTON and HEATON to the first, MARTIN and KING to the second, PENNINGTON and FITZHUGH to the third.

The cavalry was well equipped, and armed with the sabre and Colt's revolver, and the principal portion with the Sharp's carbine, a breech-loading weapon, using a paper cartridge with a cap or the Maynard primer. CUSTER'S Michigan brigade was supplied with the Spencer carbine, having a magazine carrying seven cartridges. The workmanship of this gun was indifferent, but it did, notwithstanding, excellent service and gave an immense advantage to the troops armed with it. The brigade could throw in a tremendous fire when necessary, with great effect upon the enemy, who was naturally very often deceived in his estimate of the force opposed to him, judging from the unintermitting, incessant rattle along the line that he was contending with at least a division.

The regiments of the Corps were as a rule drilled in the double rank formation, in accordance with the authorized tactics adopted in 1841, which was taken principally from the French system then in vogue. Three years of service in the field had made the men fearless riders, and had habituated them to the use of the revolver and sabre, in which they did not lack instruction.

As no campaigning could be attempted in Virginia during the winter season, the cavalry were at that time assiduously drilled in camp, except-

ing when engaged on picket duty, and as the regiments were filled with a very intelligent class of men anxious to learn, they improved rapidly and proved their efficiency afterwards in many encounters.

The country, in this section, being heavily wooded in many places, often much broken and intersected by streams with steep banks, afforded strong positions for defence to the enemy, which he was quick to take advantage of. When the Confederate cavalry were prepared to receive us under such favoring circumstances, it was found impossible to contend mounted with them with the least chance of success, and as a matter of necessity the Union troopers were compelled to resort to dismounting from their horses and fighting on foot. It must be admitted that we followed the lead of the Southerners in this respect, as they were the first to adopt dismounted fighting to any extent, and we were obliged to meet them in the same manner.

Numbers 1, 2 and 3 of each set of fours, both front and rear rank, dismounting, linked their horses, similar to the present method, No. 3 handing his reins to No. 4, who remained mounted, and three-fourths of the command became available for the work in hand. The men then formed quickly into line, and were deployed in extended order upon the center skirmisher or the right or left skirmisher, by each man obliquing at once to gain the interval. This was simple and worked well, and enabled the line to come into action and commence firing in a very short time. In less than half a minute a troop could dismount and deploy as skirmishers. Sometimes the line would be reinforced to about one man to the yard, but never heavier, and this answered all purposes. It is surprising when we consider how much was accomplished by this long, thin, apparently weak line of carbineers. How steadily it could advance under heavy fire, or deliberately retire, flexible, bending, but rarely breaking, keeping up its continuity, and showing a wonderful power of resistance. The formation seemed equal to any exigency that was presented to us during the war. The soldier becoming accustomed to losing the touch of his comrade, became more self-reliant and dependent on his own resources, taking advantage of all the cover and shelter possible, and more difficult to be persuaded that he was whipped. Here was developed the true spirit of the principle of fighting in extended and open order now introduced in foreign armies and following the adoption of the breech-loading fire-arms. Positions were attacked and defended in accordance with this method of our cavalry long before the system was followed by the infantry elsewhere. Reserves and supports were provided for, and kept in hand to render timely aid and be sent in when necessary.

Positions were occasionally held against infantry, as was done at Cold Harbor in 1864, where our dismounted men threw up hasty intrenchments and maintained their ground until the Union army came up, and again later in the same year at Deep Bottom, on the James River nearly opposite Petersburg, when Generals MERRITT and GREGG with their cavalry defeated an attack of KERSHAW's division of LONGSTREET's corps, made upon lines held only by these dragoons on foot behind temporary cover. When the cavalry was dismounted, the horses were sent to the rear to take advantage of the nearest shelter from the enemy's fire, No. 4 having no difficulty in managing the three horses intrusted to him, or in moving them from place to place at any gait. In case a retreat became necessary, portions of the dismounted men would fall back alternately, taking new positions in rear, assisted by artillery, until it was possible to mount and retire without interference; or, in other cases, some of the line would be withdrawn and mounted, and then deployed as skirmishers to cover the retreat of the remainder, with mounted charges made occasionally on the flanks or front. In these movements the horse artillery was of the greatest assistance, being very efficient and in splendid condition. In action it was pushed far to the front, often with the most advanced line, and frequently with but little support. Remaining to the last minute, then galloping to a new position, harassing the enemy with excellent practice, checking his advance and discouraging his efforts, its services in the retreat were invaluable, as it was under many other circumstances. The guns used were the well-known 3-inch rifled field pieces of the Ordnance Department, equal at that time to any in the world, and six were the complement of each battery. According to VON VERDY DU VERNOIS, two batteries of horse artillery should be attached to each division of cavalry consisting of six regiments as organized in the German army, and we were within this allowance. We had more regiments in our divisions but they were generally weak and by no means up to the full strength. Afterwards the number of guns taken by us on long expeditions was considerably reduced. In raids made by FORREST, he usually had with him about two to a brigade.

With the exception of a battery of the New York Volunteers, commanded by Captain MARTIN, all of the horse batteries in the Army of the Potomac belonged to the regular artillery.

The cavalry consisted of volunteers, excepting three regiments in the Reserve Brigade, and the 6th Cavalry at headquarters, who represented the permanent establishment. As has been remarked before, the volunteers were a splendid body of men, well officered, and at this time had a great share of "the self-reliant, all-sufficing energy" which Sir HENRY HAVELOCK ascribed to the Northern horsemen that served under SHERIDAN.

The horses were in poor condition consequent upon the arduous picket duty required of the cavalry during the previous winter, which had been continued so long into the spring, that no opportunity had been given to allow the animals to recuperate. The command was supplied with one

day's forage and three days' rations, the latter being carried in the haversacks of the men, and there was reason to believe that no grain would be found in the country to the north of the North Anna. A small train of wagons accompanied the corps chiefly for the purpose of carrying extra ammunition, the baggage and material being left with the army.

We marched on the morning of the 9th, and soon turned upon a telegraph road from Fredericksburg, General MERRITT taking the advance with the First Division. It was customary in marches for the divisions to alternate, one taking the lead the first day, another the next and so on. The same rule was carried out with the brigades in each division, and the regiments in each brigade. The gait was the walk, any other being the exception.

The three divisions were marched on one road, making a column eight or nine miles in length, and it was obviously difficult at times to know the condition of affairs in the rear when the Commanding General and his staff were riding with the leading troops.

This order of march was adopted, notwithstanding the objections that present themselves, because the roads in the country did not admit of a satisfactory management of parallel columns, and it was not considered expedient or safe to be uncertain about the locality or whereabouts of a portion of the troops at any time. The plans of General SHERIDAN are thus given in his report: "There was but little space for a large cavalry force to operate on the left of our army from Spottsylvania to the Rappahannock, and we were liable to be shut in, I therefore concluded to march around the right of LEE's army and put the command before fighting south of the North Anna, where we expected to procure grain, and where I was confident that, while engaging the enemy's cavalry, no timely assistance from his infantry could be procured, and whence, if not successful, I could proceed west and rejoin the army, swinging around towards Gordonsville and Orange Court House." Continuing our march down the Telegraph road we stopped for a time at a place known by the euphonious title of "Mud Tavern," and then passed the Massaponax creek and swamp, a very deep valley skirted with high hills, and crossed in succession the Ny, Po and Ta rivers without opposition, in which we were favored by fortune, as they afforded many advantageous positions where the enemy could have given us trouble. The commanding ground was generally on the south bank of these streams, and the country near them was thickly wooded. The head of the column finally reached Chilesburg and halted here for a short time. Resuming the march we pushed on to the North Anna, and MERRITT with his division crossed at once at Anderson's Ford, the divisions of GREGG and WILSON encamping on the north side without crossing. We were thus far successful in turning the flank of LEE's army, avoiding the enemy's infantry and encountering in our advance only a few outlying pickets. The latter must, however, have soon informed the Confederates of the movement that was going on, as about 4 in the afternoon the rear guard, consisting of DAVIES' brigade of GREGG's division, was attacked by WICKHAM's brigade after the passage of the Ta, near Tarrald's Mills, and in the conflict that ensued the enemy was eventually repulsed. The 6th Ohio Cavalry, 1st Massachusetts Cavalry, 1st Pennsylvania Cavalry and 1st New Jersey Cavalry were all engaged in the affair at times during its progress and several handsome charges were made on both sides. Captain ABELL, of the 6th Ohio was killed, two officers wounded and seventy-three men of the Union troops were killed, wounded and missing. These attacks were kept up until after dark, LOMAX's brigade assisting WICKHAM later in the afternoon. Immediately after MERRITT's division had crossed the North Anna, CUSTER's brigade was detached and ordered to proceed to the Beaver Dam station on the Virginia Central Railroad, a short distance beyond in the direction that the column had been traveling. Major BREWER, of the 1st Michigan Cavalry, with a battalion of his regiment, having the advance, captured a train of ambulances soon after leaving the river, and then moved on to the station, the remainder of the brigade following in support. A considerable force of the enemy was encountered and defeated, a number captured and 375 Union prisoners taken from them. Of the latter, one was a colonel, two were lieutenant colonels and many were officers of lower rank, belonging to regiments of infantry that had participated in the battles of the Wilderness. The poor fellows were overjoyed at their unlooked for good fortune and expressed their gratitude in unmeasured terms. As there was no other way of disposing of them they had to accompany us on our journey and share our fortune, getting mounted in every imaginable manner and style or traveling with the train. The station was destroyed two locomotives, three trains, consisting of 100 cars, ninety wagons, several hundred stands of arms, a large number of hospital tents, 200,000 pounds of bacon, flour, meal, sugar and molasses, making about 1,500,000 rations, and a great portion of the medical supplies for LEE's army. In addition, eight or ten miles of railroad track was thoroughly broken up and the culverts destroyed. This station was directly in rear of LEE's army at Spottsylvania, and between that place and Richmond, and on his line of communications. The loss must have been a serious blow to the Confederates as it was estimated at $10,000,000.00 by the Richmond *Dispatch*, in a copy which afterwards fell into our possession. Forage was found and the animals were well fed, and we prepared as far as possible for the fighting that we knew was in store for us. The enemy's cavalry was gathering and troops were collecting in front to protect the Confederate Capital. About daybreak on the 10th,

the enemy commenced a brisk cannonading as a reveille, and our camps on the south side were shelled from the opposite banks of the river.

This was followed by an attack on WILSON and GREGG, who were still on the north side of the stream, the Confederates being however repulsed, and the crossing made without much loss.

The General sent me down to the ford to keep the troops moving and expedite matters, and I remained there until the rear had passed. The ford was then obstructed by felling large trees across it from our side. The 5th Regular Cavalry and a squadron of the 1st New York Dragoons were sent early in the morning a short distance up the North Anna to the Davenport bridge, with instructions to remain there until the rear of the command had passed on the main road, to protect the flank of the column from attack. While occupying this position a superior force of the enemy crossed the river by blind fords known to them, between Davenport bridge and Anderson's ford, and interposed between our detachment and the Union column. In withdrawing, the Confederates were encountered, but without hesitation the 5th Cavalry, with Captain ARNOLD at its head, drew sabres and all made a gallant charge, cutting their way through the enemy and rejoining the corps, but losing sixty-two men in killed, wounded and missing or captured. Some fighting occurred near Beaver Dam station, the Confederates commencing to harass our rear again. In making these energetic assaults, they evidently expected that we would be compelled to halt and assist the rear guard, and be delayed in our advance. If this was the case their tactics failed utterly, as General SHERIDAN moved steadily on, acting upon the opinion that the division in rear was fully able to provide for all exigencies. Near this place, however, STUART, taking FITZHUGH LEE's division with him, left us, making a forced march by way of Hanover Court House, and then on a parallel road, in order to throw these troops between our column and Richmond, leaving GORDON's brigade of W. H. F. LEE's division to continue the attack upon our rear. About 1:30 P. M. the command arrived at Negrofoot, a plantation belonging to Mr. HANCOCK, taking the road from that place to Richmond. At 4:50 P. M. we crossed the South Anna at Ground Squirrel bridge and encamped on the south side in that vicinity, obtaining some forage.

On the evening of the 10th, General DAVIES was sent out with his brigade to Ashland station, on the Fredericksburg railroad, where he destroyed six miles of track with a number of culverts, one engine and a train of cars. In an encounter with the enemy he lost seventeen killed and wounded, including among the former Lieutenant HOPKINS of the 1st Massachusetts Cavalry, who fell in a conflict with a portion of the 2d Virginia Cavalry in the town of Ashland.

The morning of May 11th was inaugurated with an artillery fire upon

some of the Confederate cavalry who made their appearance on the north side of the South Anna, and some skirmishing was commenced with the rear guard on our departure. Having burned the bridge on the South Anna we advanced on the large road leading from Louisa Court House to Richmond. This road, sometimes known as "the old mountain road," was used a great deal by the Confederates for large trains hauling supplies to LEE's army. One of these trains passed shortly before our arrival, and the teamsters were probably not sorry to miss making our acquaintance. Arriving at the Glen Allen station on the Fredericksburg railroad, the track was destroyed for some distance. While our troops were engaged in this work, the enemy's cavalry was discovered in the direction of Richmond, and it was found that they had concentrated at "Yellow Tavern," near the intersection of the Telegraph road and the Brook turnpike, six miles from the city.

The 6th Pennsylvania Cavalry, meeting the enemy in force, was reinforced by the Reserve Brigade, who rapidly dismounted, sent their horses to the rear, and were soon engaged near the junction of these roads. The 2d Brigade of the 1st Division was dismounted, placed on the right, and the whole line attacking the enemy in the most gallant manner soon gave to MERRITT the possession of the Brook road leading directly to Richmond. The enemy occupied a strong position on hills or bluffs, partly wooded and partly open, the line crossing the Telegraph road, following it for some distance and facing nearly west, being supported by artillery, and threatening SHERIDAN's flank if an advance was continued. The Confederates were dismounted behind temporary breast works, excepting the 1st Virginia Cavalry, which was held mounted as a reserve, LOMAX's brigade being on the left and WICKHAM's on the right. CUSTER with the 1st Brigade was sent mounted towards the left of our line of battle.

In the attack made by the Reserve and 2d Brigades, the enemy fought with desperation, and it is claimed by Colonel DEVIN that the 9th New York, serving on the left of the 2d Brigade, was principally opposed to the 5th Virginia Cavalry which was defeated after a hard contest, the 9th New York capturing eight commissioned officers and eighty-four men for whom they obtained receipts. Only three officers of the 5th Virginia Cavalry came out unhurt, and among the killed was the gallant Colonel H. CLAY PATE, whose body was left in our lines.

Not being able to drive the enemy from his position, the 2d Brigade held their ground, and were warmly engaged along the whole line. On the arrival of CUSTER upon the left of the Reserve Brigade, a survey of the enemy from this place showed him that the Confederates were strongly posted on a bluff in the rear of a thin piece of woods, their battery being concealed from our view by the timber, while they had obtained a very accurate range upon our troops. The edge of the woods nearest our front

was held by the enemy's dismounted men who poured a heavy fire into our lines until the 5th and 6th Michigan were ordered to dismount and drive the enemy from his position, which they did in the most gallant manner, led by Colonel ALGER of the 5th and Major KIDD of the 6th. These troops were then ordered to hold this position until further instructions were given. In this assault the regiments were assisted by HEATON'S battery, which accompanied them and rendered valuable service. After making a careful examination, General CUSTER became convinced that the enemy's battery could be taken by a mounted charge, keeping well to the right. The 1st Michigan Cavalry, commanded by Lieutenant-Colonel STAGG, was formed for the attack, supported by the 1st Vermont Cavalry which had been furnished from CHAPMAN'S brigade of WILSON'S division, CHAPMAN himself leading the regiment. The 7th Michigan Cavalry was placed in reserve.

As soon as these troops moved forward, mounted, from the cover of the woods, the enemy opened an artillery fire with shell and cannister. Several fences had to be torn down on ground swept by the Confederate battery. When within 200 yards the command charged sabre in hand with the greatest dash, led by their intrepid commander, capturing two guns, the gunners and other prisoners, driving the enemy in confusion from that flank. CUSTER states: "After the enemy were driven across a deep ravine about a quarter of a mile beyond the position held by his battery he rallied and reformed his forces and resisted successfully the further advance of the 1st Michigan and 1st Vermont. The 7th Michigan was ordered forward and when near the enemy's position charged with drawn sabres. Major GRANGER, like a true soldier, placed himself at the head of his men and led them bravely up to the very muzzles of the enemy's guns, but notwithstanding the efforts of this gallant officer, the enemy held their position and the 7th Michigan was compelled to retire, but not until the chivalric GRANGER had fallen, pierced through the head by the bullets of the enemy." In this conflict the Confederate dismounted troops were assisted by a mounted charge of the 1st Virginia Cavalry.

The 1st Michigan Cavalry lost forty-eight men; the 7th Michigan thirty-five, and the 1st Vermont ten. During the mounted charge General STUART, commanding the Confederate cavalry, received a mortal wound while endeavoring to rally his broken command, and was taken in an ambulance to Richmond, where he died the next day.

His loss was a grievous blow to the cause that he fought for, and few cavalry officers have gained a more distinguished place in history. The entire dismounted line was now advanced, carrying everything before it, part of the enemy's forces retreating towards Ashland and part towards Richmond.

During the engagement, the 6th New York Cavalry advanced on the Brook road as far as the Brook bridge, and held it.

WILLISTON'S battery was posted with one section at the cross-roads, and the other commanding the Richmond road, and made some good practice, dismounting one of the enemy's guns and destroying one of their caissons. GORDON'S Confederate brigade of cavalry attacked the rear of the column held by GREGG, just as it was leaving Ground Squirrel bridge, and kept up a constant conflict during the entire day, and during the time that the fight at Yellow Tavern was going on, until finally defeated and compelled to retire, thus forming part of the general engagement. In this part of the action the Confederate brigade lost its commander, General JAMES B. GORDON, of Georgia, who was killed in front of GREGG'S lines.

General SHERIDAN states in his report: "The enemy made an error in tactics by sending a large force to attack my rear, thus weakening his force in front, enabling me to throw all of the strength on that which opposed my front, and fight the other with a small rear guard." The Confederate losses in this engagement are admitted to have been severe, but it is impossible to determine the number with accuracy. The Union casualties on May 11th were 242 officers and men killed, wounded and missing. From the trustworthy account of a Southern writer it appears that FITZHUGH LEE'S division of cavalry composed all of the force that opposed us on the front at Yellow Tavern and that GORDON'S brigade of W. H. F. LEE'S division engaged the rear, and that this force amounted to between 4,000 and 5,000 men. This leaves over 4,000 of the Confederate cavalry to be accounted for, as the returns of the Army of Northern Virginia, April 20, 1864, just before the campaign commenced, show 9,700 men as the strength present of the cavalry corps commanded by STUART, with an aggregate of over 16,000 present and absent. In a recent letter to the writer, General HAMPTON states that he was at this time on the left flank of LEE'S army with ROSSER'S brigade and some other cavalry (perhaps including CHAMBLISS' brigade of W. H. F. LEE'S division).

BUTLER and his brigade had not returned from South Carolina, to which place he had gone expecting to return with his old regiments replaced by others of greater strength. At all events it is unquestionable that the division of FITZHUGH LEE occupied a strong position in this affair, protected and made stronger by temporary shelter hastily thrown up.

MERRITT'S division was opposed to them, assisted by a brigade of WILSON'S, and in this brigade the 1st Vermont alone was engaged to amount to anything, as the "return of casualties" shows only one man wounded in the 3d Indiana. MCINTOSH'S brigade did not fire a shot, nor were either of GREGG'S brigades engaged on the front. With men and

officers of the reputation and fighting qualities of FITZHUGH LEE and his division, serving under the direction of STUART, and with the advantage of selecting the ground for a defence, no less number than those opposed to them in this affair could possibly have driven them from their position, and General MERRITT and his troops are entitled to great credit for their success.

After dark a reconnoissance was made in the direction of Richmond on the Brook road. Colonel DEVIN, with the 2d Brigade of the 1st Division, advancing crossed Brook creek and went forward through the outer defences of the city to the Emmanuel church, where he halted and received orders to remain in this position.

After caring for the wounded as far as practicable, and making arrangements concerning the prisoners, about midnight the whole command proceeded up the Brook road. Just beyond the church a road leads to the left between the inner and outer defences of Richmond, and General SHERIDAN determined to follow this around, and thence across the Mechanicsville turnpike south of the Chickahominy to Fair Oaks station, where he intended to encamp the next night, and then support BUTLER, if the report was true that he had crossed the James and was advancing toward the Confederate capital. Some have thought it strange that SHERIDAN did not make an attempt to take Richmond at this time, but I do not think that he ever seriously contemplated undertaking it with his cavalry alone. In later years he stated that the city could possibly have been taken, but it would have cost the loss of several hundred men, and if occupied it could not have been held for any length of time.

It is claimed in a speech made by Governor FITZHUGH LEE, of Virginia, at the recent unveiling of the statue of General STUART on the ground where he fell, that "the safety of Richmond was undoubtedly secured by the fight at Yellow Tavern, where a delay of some five hours to SHERIDAN made it possible for the works upon that side of the city to be manned by troops sufficient to hold them." This delay may have made the undertaking more difficult, but the returns show that there were troops enough in Richmond at any time on May 11th to have made a desperate defence behind strong works.

The city was thoroughly alarmed and its soldiers were on the alert. In the tri monthly return for the Department of Richmond, dated May 10, 1864, appears the following:

EFFECTIVE PRESENT.

Infantry:	
Richmond defences	1,628
Hunton's Brigade	1,608
Barton's Brigade	1,608
Gracie's Brigade	1,578
2d Maryland Infantry	286
Garrison Chapin's Bluff	435
Garrison Drewry's Bluff	395
	7,538
Cavalry:	
Holcomb's South Carolina Legion	201
Battery Virginia Cavalry	216
1st Maryland	279
	696
Artillery:	
Total	733

It is noted on the return that GRACIE'S Brigade had just arrived.

Deduct from the infantry the garrisons of Chapin's Bluff and Drewry's Bluff—830 men, and we have present effective the day before the battle at Yellow Tavern:

Infantry	6,708
Cavalry	696
Artillery	733

This, added to the cavalry we had been fighting, was certainly much more than the strength of the Union force. It will be seen that a considerable portion of this infantry made their appearance on the 12th at Meadow Bridge.

Major MCCLELLAN states in "The Campaigns of Stuart's Cavalry," that he was sent to Richmond by STUART about 10 o'clock on the morning of the 11th, and had an interview with General BRAGG who was in the city, and who told him that there were troops to the number of 4,000, and three brigades were hourly expected from the army at Petersburg. By the returns, these brigades seem to have arrived, including GRACIE'S.

After passing Emmanuel church the column took the road to the left, WILSON being in front with the 3d Division, MERRITT and GREGG in rear. Several torpedoes exploded in the Brook road under the column, but did not do much damage.

The advance crossed the Virginia Central railroad and reached the Mechanicsville road, driving in a small picket.

The city seemed very near, and there was evidence of a great stir. The gaslights could be seen, bells were ringing and locomotives whistling loudly. Just before daybreak WILSON halted near the Mechanicsville turnpike, and not being certain about the route, concluded to wait for a guide and began massing his division. Directly after the enemy com-

menced a fire of musketry from their inner works, and then a battery of heavy guns opened at a few hundred yards distant. WILSON states in his report: "Colonel CHAPMAN hastily dismounted his brigade and sent the horses back. Colonel MCINTOSH brought up his brigade and dismounted. The batteries were put in position and opened upon the enemy's works. By this time it was daylight. I soon learned that it would be exceedingly difficult to push on in the direction of Fair Oaks, and notified General SHERIDAN of the same. The defences of Richmond on the Mechanicsville pike, approach so near to the Chickahominy as to enable the rebel guns to sweep all the ground above the river bottom."

General SHERIDAN, on hearing of this state of affairs, massed MERRITT's division near the rear at the Meadow Bridge and as it was impossible to proceed farther in the direction of Fair Oaks, it became necessary to take measures to cross the Chickahominy and an examination was made into the condition of the bridge, resulting in finding that it was partially destroyed and the flooring gone. FITZHUGH LEE's division having proceeded here from Yellow Tavern during the night, had taken up a strong position, protected by breastworks, on a hill some distance from the river on the opposite side, with artillery posted so as to sweep the bridge, and a strong line of skirmishers thrown forward. MERRITT was ordered to take his division, repair the bridge as soon as possible and drive the enemy from the front. He lost no time and commenced the execution of a difficult duty with characteristic energy and judgment.

Details were sent to tear down some barns to get the necessary lumber and to protect the fatigue parties ordered to work on the bridge, the 5th and 6th Michigan regiments, dismounted, finally succeeded in crossing upon the Virginia Central Railroad bridge a little farther down the river. The advanced skirmishers of the enemy were then compelled to retreat, and our troops using a thick wood for shelter, were able to keep the Confederates at a safe distance. Our men now worked rapidly and under the supervision of the officers every effort was made to make the crossing practicable with the least possible delay.

WILSON had formed his line to protect the right and GREGG the rear. CHAPMAN moved his line further back from the position occupied early in the morning and formed along the Virginia Central railroad on the left and MCINTOSH connected with his right. A strong line of infantry advanced from the defences of Richmond against GREGG and WILSON and a force of cavalry at the same time attacked the right of GREGG's division. The engagement became general, the batteries on both sides opened fire and the rattle of musketry and roar of artillery was heard on all sides. The situation was undoubtedly a serious one. We had an impassable river on our left, the intrenchments and fortifications of Richmond on our right, and infantry and cavalry on our right and rear.

Anxious looks were cast in the direction of the bridge, but MERRITT's men worked hard, no doubt appreciating the condition of affairs, and after a few hours the crossing was made practicable and measures were at once taken against the enemy on the opposite side of the river. A force passed over the bridge and the 1st and 2d Cavalry (regulars) were formed dismounted to the right of the road, the 9th New York Cavalry, the 17th Pennsylvania Cavalry and one regiment of the 1st Brigade on the left of the road, and four regiments, mounted, in reserve upon the road. The arrangements being completed the position held by the enemy was immediately attacked, and after a hard contest, in which we suffered severely, the Confederates were driven from their rifle-pits, leaving their dead and wounded in our hands, and the pursuit was kept up for about two miles. The road was now open to the north side of the Chickahominy and the column began moving across the bridge. A renewed attack was made by the infantry upon WILSON, and MCINTOSH's men were compelled to give way and fall back before the advancing Confederates. The retreat continued until our troops had passed a little knoll upon which FITZHUGH's battery was posted. The infantry had pressed forward until it was not more than five or ten yards from Meadow Ridge, and the hostile bullets were heard whistling over the only available road. Some confusion being noticed, two other staff officers were sent down to the bridge to preserve order and prevent anything like a panic, but the necessity for this did not last for any length of time. As soon as MCINTOSH's line had fallen back to the knob alluded to, FITZHUGH's battery opened with canister, checking the advance of the enemy, and an attack being made by DAVIES' brigade on the right and a flank fire from some troops on the left, finally caused the Confederates to give up the fight and retreat behind the works. About the same time they were decisively repulsed on GREGG's front, after a warm engagement. When the 1st Division was detained at the bridge, the 2d Division (GREGG's) was in the rear, near the Brook road, and in front of the inner line of the enemy's defences. In his report GREGG says: "In this position the 2d Brigade on the right was attacked by a large force of cavalry in the direction of the Brook road. On the left of the 2d Brigade, and in front of the 1st Brigade formed on the left, the enemy attacked with infantry. Not doubting the success of their attack the enemy moved boldly against our lines despite the well directed fire of two of our batteries (MARTIN's and KING's). * * The contest was, however, of short duration and terminated in the enemy being routed along the whole line."

General FITZHUGH LEE did all in his power to detain the Union cavalry at the Meadow bridge, so as to give the infantry in Richmond a chance to inflict a disastrous blow on SHERIDAN's corps. The plan was well devised but failed in consequence of the excellent dispositions made

by SHERIDAN, supported by the good judgment of his generals and the gallantry of the officers and men. There is evidence that there were over 7,000 effective troops in array near Richmond on the 12th of May, 1864, not counting the clerks and employes who were enrolled and organized for emergencies, and if the Confederate authorities in the city did not take advantage of our situation and send all of their available troops against us, they committed a serious mistake, in regard to their own interests. We cannot determine how many were in the forces opposed to us, but we do know that a considerable body of infantry attacked our lines. General GRANT, in his memoirs, says in describing the situation of General SHERIDAN and his troops in this affair that he was in a perilous position, from which few generals could have extricated themselves.

Although many have been inspired with the gravity of the situation, still General SHERIDAN at the time appeared perfectly confident throughout and did not show any anxiety concerning the result. He was, however, too prudent an officer not to provide for such a possible contingency as the failure to carry the bridge, as he states: "The enemy considered us completely cornered but such was not the case, for while we were engaged, scouting parties were sent along the Chickahominy and several fords were found by them."

After the repulse on WILSON'S and GREGG'S lines we were not molested farther by the enemy from Richmond, and the Confederate cavalry withdrew from the vicinity. MERRITT'S division moved to Mechanicsville and there halted. The wounded and dead were provided for and the whole command marched to Gaines' Mills and encamped for the night.

On the road from Mechanicsville to Gaines' Mills the Reserve Brigade of the 1st Division was sharply attacked by a force of cavalry on the left flank, but they were repulsed without difficulty and the enemy disappeared. On our arrival at Gaines' Mills we had an opportunity to enjoy a much needed rest, which was thoroughly appreciated by both men and horses. With the exception of a few hours on the previous night we had been fighting since a little after noon of May 11th, when the engagement at Yellow Tavern commenced. We have no record of the Confederate losses on the 12th. On the Union side Lieutenants THOMAS R. EDIC, 6th Michigan; RICHARD S. TAYLOR, 8th New York, and JOSEPH S. SCHULTZ, 17th Pennsylvania, were killed, and Major A. M. CORRIGAN, 9th New York Cavalry, was mortally wounded, and 167 men were killed, wounded or missing. The heaviest regimental loss was in the 2d Pennsylvania Cavalry in GREGG'S division, where thirty men were killed and wounded.

On the 13th we proceeded leisurely down the Chickahominy to Bottom's bridge and, after making a short march, went into camp near the place. The next day the Corps crossed the Chickahominy at Bottom's bridge and marched south through White Oak swamp to Malvern Hill.

passing over ground celebrated in connection with MCCLELLAN'S seven days fighting while making his change of base. From Malvern we soon reached the James river between Haxall's Landing and Shirley's. Several gunboats were lying in the river near by and looking from Haxall's down the stream we could see quite a fleet of vessels, about two miles distant, marking the position of Bermuda Hundred, where General BUTLER and his command were located. On making our appearance on the banks of the river some excitement was caused among the gunboats, with hostile preparations, but this was soon changed to a friendly greeting from the officers and men of the crews when the character of the command was discovered. We were covered and begrimed with dust and dirt, so that a close inspection was necessary to tell the color of the uniform, and in addition to bearing the marks of travel over the hot and dusty roads of Virginia, the men and horses were hungry and half famished. The three days' rations that we had started with had been made to last six, and the horses had eaten very little but grass since the morning of the 11th. Rations and supplies were soon obtained and the men were refreshed by bathing in the waters of the James. A party, consisting of an officer of one of the horse batteries, Captain P. LACY GODDARD, of General SHERIDAN'S staff, and the writer, went on board of one of the gunboats and made the acquainance of Mr. CUSHING, the Paymaster, who treated us very kindly and hospitably.

We found that this naval craft had formerly served as a ferry-boat, running between Brooklyn and New York, having been altered by the Government to suit her present requirements, and provided with a formidable battery. Every day a boat was sent up the river with hooks and drags to look out for torpedoes, which the Confederates were constantly sending down the current in the hope of blowing up some of our vessels. In some cases their presence was indicated by small floats, but oftener they were attached to pieces of boards and trees. A day or two previous they had discovered one charged with about 276 pounds of powder. Before taking our leave we purchased from the Paymaster some underclothing and full naval rigs, with wide collars, wide trousers and all, and after taking a bath in the river we consigned our old clothing to the deep and arrayed ourselves in the new attire, presenting an appearance that must have been "recherche" for cavalrymen. We had been separated from our baggage wagons since crossing the Rapidan, and had been so constantly engaged for ten days in fighting and marching that it had been impossible to get a change of clothes, or even a chance to wash properly. On the morning of the 16th we heard heavy cannonading, continuing without intermission for several hours, in the direction of General BUTLER'S lines.

In the evening some of his officers crossed the river and informed us that the enemy had attacked our forces, and at first gained some advantage, but that finally they were repulsed, leaving the Union troops in possession of nearly the same ground that they held before the fight. Our wounded that we had been able to carry with us were cared for in General BUTLER's command, and our prisoners, amounting to over 200, were conveyed down the river in transports. Here, also, we bade adieu to the officers and men that we had released from captivity at Beaver Dam station, and we were relieved from all impediments possible. Nothing was done from the 14th to the 17th except to send a few scouting parties in the direction of Richmond. MERRITT's division was kept in the neighborhood of Malvern Hill, and a rest was taken, rendered necessary by the weak condition of the animals. On the evening of the 17th I rode twice to Malvern Hill to carry some directions to General MERRITT, one of which was an order that he should get his division in readiness to march that evening.

A little after General SHERIDAN sent me to see that a portion of the road was properly repaired by a party of pioneers at work upon it, and at 8 o'clock in the evening the whole corps broke camp and moved on the road to Jones' bridge, on the Chickahominy, by way of St. Mary's Church. We marched all night and, after many delays, arrived in the morning at Jones' bridge. This was destroyed, but a good ford having been discovered to the right, the command passed safely across the Chickahominy, wagons, artillery and horses. Very formidable earth works had been constructed to command the passage of the river at this point, but we found no enemy to oppose us. After halting for two hours we pushed on, but rather slowly on account of bad roads, the rain having commenced early in the morning and continuing very hard for several hours, made the traveling difficult, but towards evening we arrived at Baltimore Cross Roads where we encamped, the place being said to be twenty-four miles from Richmond. A house belonging to Dr. TYLER, and a building known as the "Old Baltimore Store," constituted the attractions of this place. Both were deserted, and apparently had not been inhabited for some time. The male inhabitants generally left their homes as we approached, but the country was infested with small parties of mounted men, whom we regarded as guerillas.

The question now came up as to the whereabouts of the army, and the proper course to be taken, and upon this point, General SHERIDAN says: "The uncertainty of what had happened to the Army of the Potomac during our absence, made the problem of how to get back and where to find it somewhat difficult, particularly so, as I knew that reinforcements had come up from the South to Richmond. I therefore determined to cross the Pamunkey river at the White House, and sent to Fortress Monroe for a pontoon bridge to be used for that purpose. While waiting I ordered CUSTER, with his brigade, to proceed to Hanover Court House, and if possible, destroy the railrod bridges over the South Anna. GREGG and WILSON were sent at the same time to Cold Harbor to demonstrate in the direction of Richmond as far as Mechanicsville, so as to cover CUSTER's movement. MERRITT, with the remaining brigades of his division, held fast at Baltimore Cross Roads. In carrying out the details of this plan, Colonel HOWARD, the Chief Quartermaster of the corps, was sent on the morning of the 19th with a small escort to Fortress Monroe to obtain a pontoon bridge and have it and supplies, including forage, shipped by transports to the White House on the Pamunkey. On the 20th GREGG and WILSON proceeded to Cold Harbor and sent scouts towards Mechanicsville, to which place, we had information, that the Confederates had sent infantry from Richmond. On the evening of the 20th, CUSTER, with his brigade, arrived at Hanover Court House, having received instructions to destroy the Richmond & Fredericksburg and Virginia Central railroads when they crossed the South Anna. Two trestle bridges over Hanover creek were burned, the railroad destroyed for some distance, and a quantity of commissary stores were captured at the station. The brigade then retired towards Hanovertown and encamped for the night. Returning the next morning it was ascertained that a large force of Confederate artillery, cavalry and infantry were at the railroad bridge over the South Anna, evidently "en route" as reinforcements for LEE. Having satisfactorily demonstrated their presence by a reconnoissance, CUSTER withdrew with his brigade and rejoined the corps at the White House on the 22d. After the departure of these troops, General SHERIDAN caused the railroad bridge over the Pamunkey to be carefully examined, and concluded that it was possible to repair it. MERRITT was at once directed to take charge of this work, and accordingly moved his two brigades, accompanied by Headquarters, to the White House on the 21st.

Several spans of the bridge, many stringers and the flooring had been destroyed by fire and the lumber to replace this had to be searched for in the surrounding country and brought with difficulty from a distance. General MERRITT's report states: "This was all done in about fifteen hours with poor facilities and no tools save those ordinarily carried by pioneer parties." He gives also great credit to Lieutenant MARTIN, of the 6th Pennsylvania Cavalry, who superintended the work.

Captain CLAFLIN with a detachment of the 6th Cavalry, who had been sent to West Point, returned with the intelligence that two gunboats and three transports had arrived at that place with supplies, but were afraid to come up the river any further, as they feared torpedoes. Colonel SMITH, of the staff, went down, however, and induced the commanding officer to bring the vessels up, and the supplies were issued to the troops.

When GREGG was at Cold Harbor a number of dispatches were taken to him by the aides during the time that we remained at Baltimore Cross Roads and the White House. This was a dangerous mission, as the country in the vicinity was patrolled by small parties of mounted men who were armed and apparently without regular uniform.

On one occasion I left with an escort of about three men from General SHERIDAN'S headquarters to carry an order to GREGG at Cold Harbor, the distance being near fourteen miles. When six or seven miles had been traveled, I noticed a party of mounted men, about fifteen in number, riding rapidly down a road which joined that on which we were traveling, some distance to the front. I did not like their appearance, being perfectly sure they were hostile, and hesitated for a moment whether to turn back or not, but on measuring with the eye our relative distances from the junction of the road, I concluded that mine was the nearest and resolved to push forward, which I did, taking a faster gait. As soon as this occurred the men on the other road urged their horses to a run. We did likewise, and the escort and myself being well mounted reached the junction ahead of our competitors, and went on down the main road towards Cold Harbor as fast as we could, saluted by a volley of curses and pistol shots. The race continued for a distance but the enemy soon gave it up and my dispatches were delivered safely to General GREGG.

On our return later on the same day we did not see anything of our quondam acquaintances of the morning, and arrived at headquarters without further adventure. During the 21st and 22d our headquarters were at the old Custis mansion. In times past the place must have been a delightful residence with its old shade trees, situated on the banks of a beautiful stream and its distinguished and charming society, but when we were there it was uninhabited and in sad want of repair. The bridge having been placed in condition to bear artillery and wagons, the 1st Division crossed on the evening of the 22d, and on the morning of the 23d the 2d and 3d Divisions and the wagon train. The structure was about 200 yards long and twenty-five feet high, made of trestle planked over, without railing on either side, and was rather a terrifying looking place to our horses and mules, and we had great trouble in getting some of them over. Two mules fell from the bridge into the river, and being fastened together and entangled in harness, were drowned. While the command was passing over, a small boat came down the river with two or three ladies on board. One of them was energetically waving a white handkerchief fastened to a stick, and as the boat approached seemed more and more desirous of assuring us in regard to the character of the craft. An officer was sent to find the business of this novel flag of truce, and ascertained that an old lady, who seemed to be *in command*, had come to find the whereabouts of a son, placed under guard by us the day before

for prudential reasons, and to beseech that we would not hurt him. Colonel SMITH, the Provost Marshal, satisfied her in regard to these points, and she returned, the white flag still waving away at the bow.

Having crossed the Pamunkey the command marched through Lanesville to King William Court House. This place is about ten miles from White House, and consists of eight or ten houses. A few women were to be seen, but no men. Leaving this village we passed through a beautiful country well watered and timbered, and in eight miles farther arrived at Aylett's Mills. The factories or mills that were formerly in operation here had been destroyed. We then proceeded two miles to Dunkirk on the Mattapony river, with the intention of crossing the river. A bridge was built over it with the aid of two or three old ferry-boats that were lying on the side of the stream. The corps was encamped for the night in the vicinity of Aylett's Mills, and a reconnoissance was sent out to ascertain if possible the correct situation of the army. Heavy cannonading had been heard all day, and during the afternoon I went to a high hill in order to find out the direction of the firing. It was N. 70° W., and, referring to a map, I concluded that this was probably on the North Anna near Chesterfield ford. In the evening a Confederate mail was captured, consisting chiefly of letters written by soldiers to people living in Matthews county. One writer thought their loss had been enormous, but the general tone was sanguine.

Information was received by the morning of the 24th that the army was at Chesterfield station, and the General therefore concluded not to cross the Mattapony, but moved west in the direction of Hanover Court House as far as Mangotrech Church, about ten miles. Here we turned northward and encamped in the vicinity of Reedy Swamp, some of the troops having come by a more direct road. Cannonading was heard during the day, and we had no doubt that serious fighting was going on near the North Anna. Early on the morning of the 25th we continued our march, crossed the railroad at Chesterfield station, meeting large bodies of infantry, and soon arrived at Polecat creek. The corps was placed in camp in the vicinity and the trains came up during the day. We had rejoined the army and the expedition was terminated.

In this is demonstrated very clearly the self-reliance of the cavalry in the war of 1861-65, and this spirit characterized its career on both sides. Here a large mounted force, accompanied by horse artillery, moved without extraordinary haste to the line of communications of LEE'S army, destroyed railroads and millions of dollars worth of property, and for a time occupied a position from which, if serious defeat had happened to the Confederate army, they could have operated on the rear with great effect, prepared to fight either mounted or dismounted, and supported by an efficient artillery.

Then, proceeding to the vicinity of Richmond with moderate marches, not exceeding twenty miles a day, paying little attention to the repeated assaults of the enemy on the rear of the column, defeating all of the cavalry that the Confederates could concentrate in the front, and in addition a considerable force of infantry. Fighting dismounted, when necessary, and making mounted charges when practicable, and the ground favorable, and filling the enemy with terror lest he should lose his capital by a "coup de main" and showing a coolness and audacity throughout, that could only be evinced in a command confident in its ability to take care of itself and to meet successfully any effort that the enemy was likely to make. General STEPHEN D. LEE says in a letter quoted in "Dennison's History of Cavalry": "A large body of cavalry as now armed is a match for almost any emergency; it is an army in motion and on a flank its blow is terrible, and against communications, magazines, etc., its damage is disastrous."

There is considerable difference to be observed between expeditions of this character and the dashes by cavalry into the enemy's country constituting the "raids" proper. In TRENCH'S "Cavalry in Modern War" is found the following: "It is obvious that cavalry bodies of such strength could now be used with the suddenness, secrecy and rapidity which are the essential characteristics of a cavalry raid."

In enterprises belonging to the latter class a comparatively small body of horsemen would travel at great speed, avoiding any encounter with the enemy in force, deceiving him and eluding him by feints and doing all the damage possible to railroads or other property.

Then retreating as rapidly, dexterously evading pursuit, scarcely permitting any rest for men or horses until they were safe behind the shelter of their lines. The great object was to effect all of this without a collision, as a fight with a respectable body of the enemy would have ended in destruction.

The actions near the Wilderness and this expedition were the first experiences of the cavalry corps of the Army of the Potomac under their new leader. He had been thus far successful and all were favorably impressed with the magnetism of his manners and with his untiring energy, physical endurance and ability as a soldier, which had been shown clearly and made manifest in every emergency.

A mutual confidence was inaugurated between General SHERIDAN and his officers and men, which continued, never to be broken, gaining strength and depth through future trials until the end.

Our casualties amounted to an aggregate of 625 killed, wounded and missing. It has been impossible to find among the Confederate archives any official reports submitted by the generals concerned, of the part taken by them in this affair, or of their losses, and there are but few data

bearing upon the subject. The country was made to supply the forage needed, and as a very insufficient quantity was found the animals had to travel a considerable portion of the time with very little to eat but grass. They were in miserable condition when we started and some of the weakest gave out as was to be expected, and not being able to keep up with the column, were shot in order to prevent them from falling into the hands of the Confederates. The loss in this respect was not large.

In preparing this paper I have been assisted by the records in the office of the Union and Confederate Archives under Colonel LAZELLE, by my diary kept during the war, MCCLELLAN'S "Campaigns of Stuart's Cavalry" and by letters from Generals HAMPTON, FITZHUGH LEE and W. H. F. LEE.

RETURN OF CASUALTIES IN THE UNION FORCES, DURING THE EXPEDITION UNDER GENERAL SHERIDAN, MAY 9–25, 1864. COMPILED FROM THE OFFICIAL RECORDS OF THE WAR OF THE REBELLION.

JERRALD'S MILLS, MAY 9, 1864.

Command.	Killed.		Wounded.		Captured or Missing.		Aggregate.
	Officers.	Enlisted Men.	Officers.	Enlisted Men.	Officers.	Enlisted Men.	
1st Massachusetts	.....	.....	2	1	2	21	26
1st New Jersey	.....	2	.....	2	.....	3	7
6th Ohio	1	.....	.....	19	.....	10	30
1st Pennsylvania	.....	.....	.....	13	.....	.....	13
Total	1	2	2	35	2	34	76

BEAVER DAM STATION, NORTH ANNA, DAVENPORT BRIDGE, MAY 9–10, 1864.

1st Maine	.....	1	1	2	.....	.....	4
1st Michigan	.....	2	.....	2	.....	4	8
19th New York (1st Dragoons)	.....	.....	.....	1	.....	7	8
6th Pennsylvania	.....	.....	.....	1	.....	6	7
18th Pennsylvania	.....	.....	.....	1	.....	.....	1
5th United States	.....	2	.....	1	2	49	54
1st Vermont	.....	.....	.....	2	.....	1	3
Total	.....	5	1	10	2	67	85

GROUND SQUIRREL BRIDGE, ASHLAND AND YELLOW TAVERN, MAY 11, 1864.

Command.	Killed.		Wounded.		Captured or Missing.		Aggregate.
	Officers.	Enlisted Men.	Officers.	Enlisted Men.	Officers.	Enlisted Men.	
FIRST DIVISION.							
1st Michigan	.....	11	1	33	.....	3	48
5th Michigan	.....	4	2	12	.....	3	21
6th Michigan	.....	2	.....	6	.....	1	9
7th Michigan	1	3	.....	13	2	16	35
6th New York	.....	.....	.....	1	.....	.....	1
9th New York	.....	2	2	8	.....	.....	12
1st New York Dragoons	.....	2	.....	3	.....	1	6
6th Pennsylvania	.....	.....	.....	4	.....	.....	4
17th Pennsylvania	.....	.....	.....	.....	.....	1	1
1st United States	.....	.....	.....	.....	.....	6	6
2d United States	.....	.....	.....	2	.....	.....	2
5th United States	.....	1	.....	.....	.....	.....	1
Total 1st Division	1	25	5	82	2	31	146
SECOND DIVISION.							
1st Maine	.....	2	1	24	1	26	54
1st Massachusetts	1	5	1	7	2	10	26
10th New York	.....	.....	.....	5	.....	7	12
2d Pennsylvania	.....	.....	.....	3	.....	.....	3
4th Pennsylvania	.....	1	.....	.....	.....	.....	1
8th Pennsylvania	.....	.....	.....	6	.....	.....	6
Total 2d Division	1	8	2	45	3	43	102
THIRD DIVISION.							
3d Indiana	.....	.....	.....	1	.....	.....	1
1st Vermont	.....	.....	2	5	.....	3	10
Total 3d Division	.....	.....	2	6	.....	3	11
Total Cavalry Corps	2	33	9	133	5	77	259

MEADOW BRIDGES, AND MECHANICSVILLE.

Command.	Killed.		Wounded.		Captured or Missing.		Aggregate.
	Officers.	Enlisted Men.	Officers.	Enlisted Men.	Officers.	Enlisted Men.	
FIRST DIVISION.							
1st Michigan	.....	.....	.....	.....	.....	2	2
5th Michigan	.....	.....	.....	1	.....	.....	1
6th Michigan	1	.....	.....	2	.....	.....	3
6th New York	.....	.....	.....	3	.....	.....	3
9th New York	.....	1	1	7	.....	.....	9
1st New York Dragoons	.....	.....	.....	1	.....	.....	1
6th Pennsylvania	.....	1	.....	9	.....	.....	10
17th Pennsylvania	1	2	.....	7	.....	5	12
1st United States	.....	.....	.....	.....	.....	3	3
6th United States	.....	.....	.....	.....	.....	.....	.....
Total 1st Division	2	4	1	37	.....	10	54
SECOND DIVISION.							
1st Maine	.....	.....	1	1	4	.....	6
1st New Jersey	.....	.....	.....	.....	1	1	2
10th New York	.....	.....	1	.....	8	.....	9
6th Ohio	.....	.....	.....	.....	3	.....	3
2d Pennsylvania	.....	2	1	27	.....	.....	30
4th Pennsylvania	.....	.....	.....	.....	3	.....	3
8th Pennsylvania	.....	1	1	5	.....	2	9
16th Pennsylvania	.....	.....	.....	3	.....	.....	3
Total 2d Division	.....	5	3	54	.....	3	65
THIRD DIVISION.							
1st Connecticut	.....	1	.....	4	.....	3	8
3d Indiana	.....	.....	.....	.....	.....	.....	.....
8th New York	1	1	.....	7	1	6	16
18th Pennsylvania	.....	.....	.....	3	.....	.....	3
1st Vermont	.....	.....	.....	8	.....	4	12
Total 3d Division	1	2	.....	29	1	13	46
4th U.S. Artillery, Bat. C & D,	.....	1	.....	4	.....	.....	5
Total Cavalry Corps	3	12	4	124	1	26	170

MINOR SKIRMISHES, ETC., EN ROUTE, MAY 9–25, 1864.

Command.	Killed.		Wounded.		Captured or Missing.		Aggregate
	Officers.	Enlisted Men.	Officers.	Enlisted Men.	Officers.	Enlisted Men.	
1st Maine	1					1	2
1st Massachusetts						1	1
1st Michigan				1		1	2
5th Michigan				5			5
9th New York				2			2
1st Pennsylvania		3		2		1	6
4th Pennsylvania						1	1
6th Pennsylvania				1			1
8th Pennsylvania				1			1
15th Pennsylvania		1		6		2	9
2d United States		1		1		2	4
5th United States						1	1
Grand Total Cavalry Corps	7	57	16	321	10	214	625

THE OPERATIONS OF THE CAVALRY IN THE GETTYSBURG CAMPAIGN.*

BY CAPTAIN GEORGE B. DAVIS
5TH CAVALRY.

IT shall be my purpose in this paper to trace, as briefly as may be, the operations of the cavalry of the Armies of the Potomac and Northern Virginia in the campaign of Gettysburg. Those operations have peculiar interest and significance on account of their magnitude and novelty The cavalry of both armies had been reorganized during the preceding winter, and it was employed in accordance with principles which are now familiar, but which were then in process of deduction, or were, for the first time, subjected to the test of practical experience. I shall treat the subject somewhat broadly, from the point of view of the *strategic* use of the arm. I shall not go into the details of the several cavalry engagements, interesting and instructive as I know them to be, but shall leave them to be made the subject of separate tactical studies.

On the morning of June 1, 1863, the armies of the Potomac and Northern Virginia still confronted each other, in the lines which they had reoccupied at the close of the Chancellorsville campaign. That campaign had terminated so decisively in favor of the Confederates that an early movement, in the nature of an offensive, might have been and was daily expected by Generals HALLECK and HOOKER. It was also, if not known, at least shrewdly suspected by the latter that the Confederate movement would, in many respects, resemble the invasion that had terminated unsuccessfully, in the defeat at Antietam in September of the preceding year. The Federal commander, however, was not long kept in doubt as

* The maps used in the preparation of this article were those contained in McCLELLAN'S "Campaigns of Stuart's Cavalry," BATES' "Battle of Gettysburg" and those accompanying General H. J. HUNT'S concise and valuable history of the campaign in Numbers 19, 20 and 21 of the Century Company's "Battles and Leaders of the Civil War." The movements can also be followed on the "Map of Portions of Virginia, Maryland and Pennsylvania," issued by the Engineer Bureau of the War Department. For fuller details the reader is referred to Vol. III of the COMTE DE PARIS' "Civil War in America," BATES' "Battle of Gettysburg," McCLELLAN'S "Campaigns of Stuart's Cavalry," SWINTON'S "Army of the Potomac" and Nos. 19, 20 and 21 of the "Battles and Leaders of the Civil War."

to the intentions of his antagonist, for before any movement of the Army of the Potomac had been fully determined upon, LEE himself assumed the initiative by putting his army in motion towards the Valley of Virginia. Such advantage, whether political or military as goes with the offensive having been gained by his adversary, the more difficult task remained to HOOKER of ascertaining the movements of his enemy, and of so regulating his own as to keep his force, at any cost, between that enemy and the city of Washington.

The country lying in the triangle between the Potomac, Rappahannock and Shenandoah rivers was to be the immediate theatre of operations of the contending armies. The area thus included was, in some respects, favorable and in others decidedly unfavorable to military operations. Across its western border run two ranges of mountains: the Blue Ridge and the Bull Run or Catoctin range. They lie about fifteen miles apart; their general course is from northeast to southwest, and they are pierced by a number of gaps or passes, which were destined to play an important part in the ensuing campaign. Between the mountains and the Potomac the surface is diversified by hills and valleys, terminating in the bluffs that mark the western bank of the Potomac and the north bank of the Rappahannock rivers. The country is generally wooded, with timber of second growth standing so closely as to constitute — nearly always an obstacle to the movement of the troops — and at times, to preclude their passage. The principal roads of the region follow the tributaries of the Potomac in a general southeasterly course; the roads or cross roads connecting these, and running north and south are narrow and tortuous; difficult to use at all times, and after rains almost impracticable. It is important to remember this, for it was chiefly upon these narrow roads that the Army of the Potomac was required to move.

The organization of both armies had been subject to important modifications. The infantry of the Army of the Potomac was organized into seven army corps: the 1st, 2d, 3d, 5th, 6th, 11th and 12th; having a strength "present for duty" on June 30, 1863, of 77,208 men. Each of these corps contained three divisions of infantry and a brigade of artillery. The artillery was composed of sixty-five batteries (370 guns). Of these, thirty-five batteries (212 guns) were attached, in brigades of five batteries each, to the infantry corps. Nine horse batteries, (fifty guns), were attached to the cavalry corps, and twenty-one batteries, (108 guns), were in the General Artillery Reserve. The personnel of the artillery consisted of 7,188 officers and men. The cavalry was organized into a corps of three divisions. Its strength at any particular moment is very difficult to determine, owing to the great loss of horses during the campaign. The aggregate present "mounted" on June 1, 1863, was less than 8,000 men. It was increased, late in June, by the absorption of General STAHEL's command, but was never able to muster, at any time, more than 9,000 *mounted* men.

The infantry of the Army of Northern Virginia was organized into three corps, commanded by Generals EWELL, LONGSTREET and A. P. HILL. Its effective total on May 31, 1863, was 54,356 men. The Confederate artillery was composed of fifteen battalions, of four batteries each, aggregating 257 guns and 4,460 men; and of one battalion of horse artillery, (six batteries of thirty guns), which was attached to the cavalry. The cavalry retained its division organization, and was composed of five brigades, aggregating, on May 31st, 9,536 men The strength of the cavalry division, like that of the Federal cavalry corps, was subject to constant fluctuation, due to the same cause —loss of horses in campaign.*

On June 3, 1863, the three corps of infantry composing the Army of Northern Virginia were encamped along the south bank of the Rappahannock, on a line extending from the fortified position of Fredericksburg, to the east and southeast as far as Hamilton's crossing. From that point, the fords of the upper Rappahannock were observed and held by STUART's cavalry, the main part of which was bivouacked in the open air between Culpeper Court House and Brandy Station. The Federal infantry still occupied its cantonments at Falmouth. To the right and somewhat to the rear, the cavalry corps, under General PLEASANTON, was massed at Warrenton Junction, charged with the duty of maintaining a line of outposts, extending from a point on the north bank of the Rappahannock, a few miles west of Falmouth, to the west and northwest as far as Warrenton. From time to time, small bodies of the Federal cavalry were pushed into the country between the Orange & Alexandria railway and the upper Rapidan, to check the operations of partisan corps, and to give timely information of any movements of the enemy in that quarter.

LEE's first objective was Culpeper Court House, a center from which two systems of road diverge—one to the northeast, leading to Manassas, Fairfax and Alexandria; the other to the north and northwest, leading to the Shenandoah Valley. Leaving HILL's corps to occupy the lines at Fredericksburg, the corps of EWELL and LONGSTREET were put in motion towards Culpeper, which was reached by LONGSTREET's advance on the evening of June 7th. By nightfall of the 8th, LONGSTREET was joined by EWELL. The movement to that point was to be covered by STUART's cavalry, and was to be *discovered*, if possible, by the Federal cavalry under PLEASANTON. LEE's intentions were accurately suspected by HOOKER, who, on June 6th, directed PLEASANTON to make a recon-

*The above account of the organization and strength of the two armies is taken from General HUNT's thoroughly digested article upon "The Opposing Forces at Gettysburg," in No. 21 of "Battles and Leaders of the Civil War," page 434.

noissance in force in the direction of Culpeper, to ascertain whether any Confederate infantry had yet arrived in that vicinity. To increase PLEASANTON's force, the mistake was made of attaching two brigades of infantry to his command. Just how these infantry brigades were to assist General PLEASANTON, who was engaged in an undertaking in which celerity of movement, rather than force, was essential to success, does not appear.

The problem before General PLEASANTON was to ascertain whether the Confederate army or any considerable portion of it was moving upon the road between Fredericksburg and Culpeper. If such a manœuvre was in progress he was to ascertain something as to its state of forwardness. Had one corps or more reached Culpeper? Was any force in motion to the west of that town, and if so, in what direction? He knew that STUART's command was bivouacked somewhere in the vicinity of Brandy Station, and this knowledge would be of avail in determining the strength and composition of his reconnoitering columns.

At some point on the north bank of the Rappahannock PLEASANTON divided his command into three columns. One, which he accompanied, composed of BUFORD's division and AMES' brigade of infantry, was to cross at Beverly ford and move, by St. James church and Gee's house, to Brandy Station. The second, composed of GREGG's and DUFFIE's divisions and RUSSELL's brigade of infantry, was to cross at Kelly's ford, and move, by Shackleford's, to the crossing of Mountain Run, near Stone's house. At that point GREGG's command was to separate, his own division moving by the direct road past Mount Dumpling to Brandy Station, while DUFFIE's division was to take the left hand road by C. DOGGETT's, MADDEN and DOGGETT's houses to Stevensburg and beyond. Each of the three columns encountered the enemy, attacking him successfully, in point of time from right to left, the right column under BUFORD being the first to engage, followed at short intervals by GREGG and DUFFIE. I shall not enter into the details of this remarkable engagement which is worthy of being made the subject of a separate tactical study, for it is with the operations of these columns as gatherers of information as to LEE's movements that I propose to deal. After a battle lasting nearly all day, in which the fortune of war rested first with one and then with another of the contestants, the Federal cavalry returned unmolested to the north bank of the Rappahannock, and there was an opportunity to ascertain what had been gained during the day in the way of information as to the enemy's movements.

BUFORD and GREGG had encountered the cavalry of the enemy, which had been supported and relieved by his infantry towards the close of the day. To what extent or in what force that infantry had appeared on the field was not accurately known. It was fair, therefore, to infer from

these operations that there was an infantry force of the enemy in the vicinity of Culpeper. DUFFIE, who must have crossed and recrossed the road by which the corps of LONGSTREET and EWELL had entered Culpeper, did not examine the road to ascertain that fact, or if he did, made no report of the result of his examination. It is claimed in behalf of General PLEASANTON that a part of STUART's headquarter baggage was captured early in the day, in which certain papers were found, disclosing the purpose of the Confederate movement, and proving beyond doubt that LEE's army was on its way to the Shenandoah Valley. This claim, though accepted by the COMPTE DE PARIS, is stoutly denied by STUART's friends. It would have been certainly a remarkable circumstance if so prudent a man as General LEE had formulated his intentions at so early a period of the campaign; it is still more remarkable that he should have entrusted them in writing to even a trusted subordinate.* If such despatches or memoranda were found and transmitted to General HOOKER, they certainly did not clear his mind of doubt as to LEE's purposes, since he admits that there was great uncertainty as to the enemy's intention on the 12th, and even so late as the 21st of June.

It must be admitted therefore that the movement of the Federal cavalry on Brandy Station had not been fruitful of results in the shape of authentic information as to the movements of the enemy. It had shown, however, that such information was to be obtained by a bold, well-directed and energetic quest. It was an object lesson, however, in a new strategical employment of the arm, which the leaders of the Federal cavalry were not slow in learning.

The battle of Brandy Station illustrates two methods of employing cavalry, which have been slowly making their way into general recognition in modern war: 1st. Its separate employment against the cavalry of the enemy. 2d. Its employment, in sufficient force to be self sustaining, for the purpose: (*a*) of obtaining information of the enemy's movement; (*b*) of preventing the enemy's cavalry from obtaining similar information. Of the Federal cavalry, this engagement may be said to have been a successful illustration of the former use, but an unsuccessful example of the latter. In so far as the Confederate cavalry was concerned, it is a matter of surprise—as the attacks upon it were timed—that it escaped destruction; for, under the circumstances, to have escaped destruction, was, in itself, a brilliant success. It is also not a little remarkable that so able and wary a general as STUART was—a very master of the art of outpost duty—should have been so taken by surprise as he was on this occasion. Had the Federal commander used his opportunities

*General LEE in a letter to Secretary SEDDON, dated June 8, 1863, formally requested authority to undertake the invasion. Secretary SEDDON's reply, approving the project, bears date June 10, 1863. No. 19, "Battles and Leaders of the Civil War," pp. 295, 296.

with the vigor and skill that STUART displayed in the conduct of an obstinate and desperate defense, the Confederate cavalry would have been dealt a blow from which it would hardly have recovered. "One result of incalculable importance certainly did follow this battle—it *made* the Federal cavalry. Up to this time confessedly inferior to the Southern horsemen, they gained on this day that confidence in themselves and their commanders which enabled them to contest so fiercely the subsequent battle-fields of June, July and October."*

We have seen that the corps of EWELL and LONGSTREET had succeeded in reaching Culpeper on June 8th and 9th. HILL's corps, which had been left in the lines at Fredericksburg, to mask this movement, was withdrawn on June 14th and reached Culpeper on the following day. HOOKER, in order to conform to the movements of his adversary, on June 11th established the 3d Corps on the north bank of the Rappahannock, between Beverly Ford and Rappahannock Station. On the following day the 1st and 11th Corps were ordered, the former to Bealeton, and the latter to Catlett's Station on the Orange & Alexandria railway. These three corps constituted the right wing of the Army of the Potomac, and General REYNOLDS was assigned to command the whole. These movements were made with the double purpose of confronting LEE in his new position, and of covering Washington from a repetition of JACKSON's manœuvre of the preceding year.

The initiative in the next movement rested with General LEE. His first objective had been Culpeper, his second was to be the fords of the upper Potomac. A reference to the map will show two ranges of mountains, crossing the theater of operations from north to south, and distant from each other upon an average fifteen miles. Between these ranges lies the Loudon Valley; to the west of the Blue Ridge lies the valley of the Shenandoah. The eastern range crosses the Potomac at the Point of Rocks—the western at Harper's Ferry. Below the Point of Rocks the Potomac is rarely fordable; above Harper's Ferry the fords are numerous and practicable, especially in the summer. Both ranges are pierced by frequent gaps or passes, most of which, though practicable for troops of all arms, are easily defended and are thus susceptible of being converted into efficient military obstacles. The north and south roads in the Shenandoah Valley are very good, especially in summer; those of the Loudon Valley are less good, while those in the area between the Bull Run—Catoctin mountains and the Potomac are extremely bad. For these reasons, LEE determined to pass the larger part of his infantry and artillery through the valley of the Shenandoah. The ranges of mountains on the right of his column would thus constitute a screen, concealing his movements from the observation of the enemy. But the

* MCCLELLAN's "Campaigns of Stuart's Cavalry," page 294.

mountain ranges alone, however well they may have been situated for that purpose, were not to be his sole reliance in screening his march, for, as we shall presently see, the Loudon Valley and the passes connecting it with the region to the east, were to be watched and held by STUART, supported, if need be, by LONGSTREET's corps of Confederate infantry. From his left flank, in his northward march, LEE had little to fear. He therefore disposed his marching columns in the following order:

On the morning of June 10th EWELL's corps was put in motion for the Shenandoah, *via* Springville, Gaines cross-roads and Flint hill, HILL and LONGSTREET were to follow later; the latter by the Loudon Valley, partly, as I have said, to support STUART, and partly to lead the enemy to believe that Manassas and Centreville were the real objectives. On the 12th the head of EWELL's column passed through Chester Gap and reached the Shenandoah at Cedarville. JENKINS' brigade of cavalry had accompanied EWELL and IMBODEN's brigade had joined him in the valley; the former covering the advance and the latter the left flank of the advancing column. After passing the Blue Ridge at Chester Gap RODES' division, preceded by JENKINS' cavalry, was detached to attack and destroy MCREYNOLDS' brigade of Federal infantry, which was posted at Berryville, about twelve miles east of Winchester. The rest of EWELL's corps continued, *via* Stevensburg and Kernstown, to Winchester.

The military district of which Winchester is the centre was commanded by General MILROY. His command was independent of that of General HOOKER, and he was not informed by either HOOKER, HALLECK or his own cavalry, of the rapid advance of EWELL's column, and it was not until late on the 11th that he was made aware of his danger. The result need hardly be stated. A commander who expects the Commanding General of the Army to do his out-post work for him, is not likely to find that personage a sufficient substitute for a vigilant and enterprising cavalry—indeed, it may perhaps be questioned, whether HALLECK, in his office in Washington, was able to render MILROY as efficient service in this respect as he might have gotten from some of his raw levies of West Virginia Horse, who wore plug hats and called their officers by their Christian names

LEE's columns were now stretched out to a dangerous length, inviting irretrievable disaster had he been opposed by a general less hampered with instructions from Washington than was HOOKER. On June 14th EWELL, having inflicted a crushing defeat upon MILROY—whom he had compelled to abandon his artillery and trains and to retire in great confusion upon HANCOCK and Harper's Ferry—resumed his route, with JENKINS' and IMBODEN's cavalry in front and flank, toward Williams-

port, the place appointed by the Confederate commander for the crossing of the Potomac.

While General LEE had no intention of entering the region between Warrenton and Fairfax, in which he had operated so successfully the previous summer, he was not unwilling to lead HOOKER to believe that an invasion of that territory was among the possibilities of the near future. To that end LONGSTREET was moved from Culpeper on June 15th, with orders to enter the Loudon Valley and appear to threaten Leesburg, returning when that purpose had been accomplished, by Ashby's and Snicker's Gaps. As this manœuvre would bring him within easy striking distance of the Federal advance under REYNOLDS, STUART was directed with the brigades of FITZ LEE, ROBERTSON and W. H. F. LEE, to mask the movement of LONGSTREET by moving his cavalry in front and on the right flank of the infantry column. To perform this task effectively it was necessary to occupy and hold Aldie and Thoroughfare Gaps. These are the two central passes through the Bull Run mountains; through the former runs the main road from Winchester to Alexandria; by the latter the Manassas Gap Railway gains an entrance into the Loudon Valley.

STUART, on June 15th, pushed forward to occupy Thoroughfare and Aldie Gaps, assigning to CHAMBLISS, temporarily commanding the brigade of W. H. F. LEE, the task of occupying the former, and to Colonel MUNFORD, who at the moment commanded the brigade of FITZHUGH LEE, that of occupying the latter. ROBERTSON's brigade was directed to Rectortown, a point in the Loudon Valley, from which he could reinforce either CHAMBLISS or MUNFORD should occasion arise. The brigades of JONES and HAMPTON were left to guard the fords of the Rappahannock and cover the march of HILL from Fredericksburg to the Shenandoah.

MUNFORD, moving by Salem, Piedmont and Upperville, reached Middleburg on June 17th, and halted between that town and Aldie, pushing his pickets, however, through the pass to the eastern slope of the mountain. As there seemed to be no prospect of a Federal advance, by way of Warrenton and the upper courses of the Rapidan, ROBERTSON was moved, on the 17th, from Rectortown to Middleburg. On the same day CHAMBLISS was withdrawn from Thoroughfare Gap, and, on the 18th, he, too, arrived at Middleburg.

We have seen that the three corps constituting the advance of the Army of the Potomac, under REYNOLDS, were moved, on June 13th, to Bealeton and Catlett's Station. On the same day the cavalry was massed at Warrenton Junction.

EWELL's attack on MILROY, at Winchester, proved that a very considerable force of Confederate infantry was on its way to Pennsylvania,

and it now became necessary for HOOKER to dispose his force to conform to the probable intentions of the enemy. So, between June 14th and 17th, the several corps were moved to their right and rear, and arranged in two lines: the first, composed of the 1st, 11th, 3d and 5th, occupying the line between Herndon's Station, on the Loudon & Hampshire railway, and Manassas Junction; the second, composed of the 12th, 6th and 2d corps, occupying a line extending from Fairfax Court House due south to the Occoquan. This movement of the Federal infantry was covered by PLEASANTON, and it had hardly been completed, when HOOKER determined to employ his cavalry in a bold attempt to push through to the Shenandoah, if need be, to obtain some definite information as to the strength and purposes of the enemy.

On the 17th PLEASANTON was directed to the vicinity of Aldie, with orders to pass the gap and ascertain what the enemy was doing in the Loudon Valley and beyond. He was supported in this undertaking by BARNES' division of the 5th Corps. He took with him BUFORD's and GREGG's divisions of the Cavalry Corps—detaching DUFFIÉ, with a single regiment, to make a *detour*, by Thoroughfare Gap and the western slope of the Bull Run mountains, to Middleburg, a movement which will be described a little farther on. It was PLEASANTON's purpose to force his way, across the Loudon Valley, to Ashby's Gap in the Blue Ridge; for it was only by reaching that point that he could obtain any reliable information of the Confederate forces in the valley of the Shenandoah.

The disposition of STUART's force, on the morning of June 17th, has already been described. MUNFORD was at Dover Mills, a short distance to the west of Aldie, with outposts, on the road to the gap to the east of the town. CHAMBLISS was between Thoroughfare Gap and Middleburg; ROBERTSON between Rectortown and Middleburg; both converging upon that point, which they reached, the latter on the evening of the 17th, the former on the morning of the 18th of June.

In advancing upon Aldie, GREGG's division was placed at the head of the Federal column, and, at about 2 P. M., MUNFORD's outposts were encountered and driven back through the town. In the engagement that ensued, in which there was much brilliant fighting on both sides—both mounted and on foot—the advantage remained with General GREGG, who held the field at the close of the day. MUNFORD's brigade withdrew from the field at about dark, in obedience to orders to that effect from General STUART. Its retirement was effected in good order and without molestation from the enemy. With a view to ascertain whether any considerable force of the enemy was moving in the upper Loudon Valley, Colonel DUFFIÉ, with the 1st Rhode Island Cavalry, was directed by General PLEASANTON to pass through Thoroughfare Gap and examine the coun-

try as far to the north as Middleburg. There it was expected that he would rejoin the main body after it had passed Aldie Gap, and specific orders were given him to that effect. DUFFIÉ passed Thoroughfare Gap at 9:30 A. M. on the 17th; at 4 P. M. he encountered the outposts of STUART'S headquarter guard in the outskirts of the town of Middleburg. These were quickly driven in, but disclosed the fact that the place was held by the enemy. DUFFIÉ'S orders, most unwisely, required him to encamp at Middleburg on the night of the 17th. I say unwisely, for PLEASANTON was not then in possession of the town, nor was he certain of his ability to occupy it even by nightfall of the 17th. DUFFIÉ'S reconnoissance was for the purpose of obtaining information; when that information was obtained, his orders should have required or permitted him to bring it to the lines of his own army, wherever they were. To fix the termination of a day's march, in the face of the enemy at a point within that enemy's lines, is not sound strategy. In this case it resulted in defeat, and converted what might have been a successful reconnoissance into a complete disaster.

When poor DUFFIÉ encountered STUART'S outposts he was at first strangely successful. The vedettes were driven in, and so precipitately that STUART himself, who was in the vicinity at the moment, narrowly escaped capture. The size of DUFFIÉ'S command, however, was soon made known; MUNFORD was recalled from Aldie, and ROBERTSON and CHAMBLISS, who were at that moment marching upon Middleburg, were hurried forward with a view to surround and capture DUFFIÉ'S entire command. At seven o'clock in the morning he was attacked by ROBERTSON'S brigade. His men fought bravely and repelled more than one charge before they were driven from the town; retiring by the same road by which they had advanced. Unfortunately for DUFFIÉ, this route was now closed by CHAMBLISS' brigade, which surrounded him during the night and captured early the next morning the greater part of those who had escaped from ROBERTSON on the previous evening. Colonel DUFFIÉ himself escaped capture and reached Centreville early in the afternoon with four of his officers and twenty seven men.*

On June 18th no important movements were undertaken on either side. The day was passed by both PLEASANTON and STUART in preparing for a renewal of the contest on the following day.

Early in the morning of June 19th PLEASANTON (GREGG'S division being still in advance) moved out in the direction of Middleburg and encountered STUART about a mile to the east of the town. From this position the Confederates were dislodged by a successful dismounted attack on their right flank, and obliged to take up a position about half a

* MCCLELLAN'S "Stuart," pp. 304, 305.

mile to their rear. On the evening of this day STUART was reinforced by the arrival of JONES' brigade, which was posted at Union. On the morning of the 20th HAMPTON arrived and was stationed on the Upperville road, replacing CHAMBLISS, who was moved over to the left of the line, in front of Union. STUART now had with him five brigades of cavalry and occupied a line extending from Middleburg, due north, to Union. Opposed to him were the six brigades composing the divisions of BUFORD and GREGG, supported by BARNES' division of Federal infantry.

On the 21st the initiative was again taken by PLEASANTON. At 8 A. M. BUFORD advanced on the Union road, with instructions to turn the left flank of the Confederate cavalry. GREGG advanced, simultaneously with BUFORD, with orders to engage the attention of the enemy's right. As is often the case in war, the parts to be played by GREGG and BUFORD were reversed, GREGG'S feint becoming the principal attack. STUART was steadily pushed back, through Upperville, toward the eastern slopes of the Blue Ridge He retired slowly, stubbornly contesting every inch of ground, and at nightfall formed line of battle across the Upperville pike about two miles west of the town. Here, after fighting for the day had entirely ceased, he was reinforced by a brigade of LONGSTREET'S infantry. On the morning of June 22d PLEASANTON retired and rejoined the Army of the Potomac; on the same day STUART established his headquarters at Rector's cross roads, on the Aldie and Winchester pike, between Upperville and Middleburg.

PLEASANTON'S success in the engagements at Aldie, Middleburg and Upperville had been most encouraging; the more as they were calculated to inspire both officers and men of his command with confidence in their capacity to cope, on equal terms, with their redoubtable adversary. In a series of encounters covering a period of five days — between June 17th and 21st — he had succeeded in reaching the base of the Blue Ridge at Snicker's Gap. Partly from the observations of his scouts and partly from the stubborn character of STUART'S resistance, he had ascertained the general fact that the mass of LEE'S infantry was moving northward through the Shenandoah Valley. He does not seem to have learned, however, that LONGSTREET'S corps had entered the Loudon Valley, or that it had passed through Ashby's and Snickers' Gaps into the valley of Virginia. General LEE had now fully committed his army to the scheme of invading Pennsylvania; General HOOKER was sufficiently well informed of the plans of his adversary to enable him to conform his movements to those of the enemy. Both generals, for the next few days, stood less in need of their cavalry than at any time since the campaign began. The cavalry, which had been employed almost without intermission for more than two weeks in the performance of arduous and unfamiliar duties, stood much in need of rest. But this it was not to have. The

Army of Northern Virginia completed its crossing of the Potomac on June 26th; STUART, two days earlier, had set out on his famous *detour* to reach the Confederate right, between York and Harrisburg, in Pennsylvania. The last troops of the Army of the Potomac passed into Maryland on the same day—June 26th—that LEE's rear guard crossed into the Cumberland Valley.

It will perhaps be well at this point to trace the march of the Confederate infantry to the extreme point reached in its invasion of Pennsylvania. EWELL, on June 15th, the day following his decisive encounter with MILROY, reached and crossed the Potomac at Shepherdstown; JENKINS' cavalry brigade covering the advance until the river was passed, when it was directed to Chambersburg to gain information and collect supplies. EWELL with the main body of his infantry moved by Sharpsburg to Hagerstown, where he divided his command, and directed RODE's and JOHNSON's divisions to Carlisle, *via* Chambersburg, and EARLY to York, *via* Gettysburg. Carlisle was occupied on June 27th and York on June 28th. On the 29th LEE, becoming satisfied that HOOKER was following him, recalled EWELL, directing him to concentrate at Cashtown, about ten miles northwest of Gettysburg on the Chambersburg road. LONGSTREET, after his *detour* through the Loudon Valley, turned to the west and entered the valley of the Shenandoah through Ashby's and Snicker's Gaps. He crossed the Potomac at Williamsport on June 25th and 26th and passed through Chambersburg to Fayetteville, where he arrived on June 27th. On the following day he was directed to Cashtown, which was reached by his advance on June 29th. HILL, leaving Culpeper on the 18th, reached Shepherdstown on June 23d; there he crossed into Maryland and marched, by Boonesborough, to Fayetteville, which he reached on June 27th.

In the general movement of the Confederate army down the Shenandoah Valley, and across the Potomac into Maryland and Pennsylvania, it was LEE's intention that STUART should maintain his position on the right flank of the infantry. In the performance of this duty STUART, through his orders under LONGSTREET's command, was left a wide discretion. It was necessary that this should be so, for the task to which he was about to address himself was altogether new and untried; it was also beset with peculiar difficulty and danger. To understand this difficulty it will be necessary to consider for a moment the theatre of operations. STUART's orders required him to keep to the right of the Confederate infantry. That infantry was marching in a long column, the head of which was in Pennsylvania, the rear in the lower courses of the Shenandoah. East of the Blue Ridge, Catoctin range, and separated from LEE by the narrow Loudon and Catoctin Valleys, the country was occupied by the Army of the Potomac. The fords of the Potomac, from Harper's

Ferry to the west, were reserved for the passage of the artillery and infantry; from the Point of Rocks to the south they were controlled by the enemy. *Between* Harper's Ferry and the Point of Rocks the mountain ranges cross the river; there are few practicable fords; the roads are narrow and difficult and the general surface of the country is broken, irregular and full of obstacles. There were then but two courses open to STUART: to cross at Shepherdstown, keeping to the right and rear of LONGSTREET, or to cross the Potomac below HOOKER and join the right of the Confederate advance, under EWELL, in Pennsylvania. The latter course was the one which he favored and advocated, in at least three communications to General LEE. A glance at the map will show that this route to York or Harrisburg was at least as short as that taken by EWELL, LONGSTREET and HILL. The Maryland roads were certainly better than those used by the infantry, and the moral effect upon the authorities in Washington could be confidently reckoned upon. There was no time during the progress of the war when the approach of even an insignificant partisan force to the vicinity of the defenses of the Capital did not fully engage the attention and excite the alarm of the distinguished lawyer who then commanded the Armies of the United States. If such an effect followed the incursion of a partisan force of less than a hundred men, why might not STUART count upon a correspondingly increased effect to follow the news that he had interposed the greater part of his command between the Army of the Potomac and Washington. In this he was not mistaken, and General LEE so far concurred with him as to twice give him a written order to carry the scheme into effect. The sound military objections to the project were either not apparent to General STUART, or were outweighed, in his mind, by the apparent brilliancy of the undertaking. To the success of his endeavor, time and the utmost celerity of movement were absolutely necessary, but these were the uncertain elements in the problem before him. He would have to pass through or evade the columns of Federal infantry which were then converging on Frederick, and his recent experiences with the Federal cavalry had not warranted the belief that it was less enterprising or less ably commanded or handled than his own. As the event proved these elements entered as causes of delay, preventing that junction with LEE at Gettysburg, which the latter so ardently desired, and the failure of which he so bitterly regretted.

In the execution of this movement, STUART selected to accompany him the brigades of FITZ LEE, HAMPTON and CHAMBLISS, leaving those of ROBERTSON and JONES to replace him on the right and rear of the infantry corps. Salem was selected as the point of departure of the expeditionary column, and the three brigades were assembled there on the night of June 24th. At 1 A.M. of the 25th the command moved *via* Glass-

cock's gap to Haymarket, where HANCOCK's corps of Federal infantry was encountered. This caused a delay of nearly twenty-four hours, as it required a longer *detour* to be made, *via* Buckland Mills and Wolf Run Shoals. On the 26th, he passed Fairfax Court House, and on the 27th reached Dranesville. During the night of the 27th, he accomplished the difficult passage of the Potomac at Rowser's Ford, and massed his command, at daylight, on the Maryland shore. After a short rest on the morning of the 28th, the column pushed forward (HAMPTON's brigade taking the road via Darnstown), to Rockville, on the main road from Washington to Frederick City. Here the telegraph wires were cut and the first, and only important, capture was made, of a train of 125 wagons, laden with supplies for the Federal army.

STUART, now believing that he had gained sufficient ground to the east, to pass well to the right of the Army of the Potomac, turned to the north at a point about six miles east of Rockville, and, by a rapid night march, reached the Baltimore & Ohio railway, at Hood's mill, soon after daybreak on the morning of the 29th. The railway and telegraph lines were destroyed, and the railroad bridge at Sykesville was burned. STUART then pressed on, reaching Westminster at 5 P. M. of the same day, and here he determined to give to his tired men and horses the rest of which they stood so greatly in need.

Meantime the cavalry of the Army of the Potomac had not been idle. PLEASANTON, on retiring from the Loudon Valley, on June 22d, though actually employed on outpost service, was enabled, in the few days that elapsed before he crossed into Maryland, to supply his command with both rations and forage. HOOKER, still uncertain as to LEE's precise intention, had, on June 17th, established his corps in two lines extending from Manassas Junction to Dranesville. By the 24th, he had shifted them still farther to his right, the 12th, 5th and 2d occupying the line from Leesburg to Haymarket, the 11th at Edwards Ferry and the 1st, 3d and 6th in reserve, upon a line extending from Farmwell, through Gum Springs, to Centreville. It becoming apparent to HOOKER that the greater part of LEE's army was now north of the Potomac, and that all danger of a direct attack, by way of Centreville and Fairfax, had disappeared, he passed his army across the Potomac at Edwards Ferry, on June 25th and 26th. On the 27th, the advance under REYNOLDS occupied Middletown. The divisions of BUFORD and GREGG crossed, in the rear of the infantry, on the 27th. At about this time, the strength of the cavalry corps was increased by attaching to it the regiments of cavalry that had composed the command of General STAHEL, and which had been stationed in front of Washington, on outpost duty, during the preceding winter and spring. The command of the new division was given to General KILPATRICK. On June 28th General HOOKER was relieved from the command of the Army of the Potomac by General MEADE.

On the night of the day that General MEADE succeeded to the command, the Confederate invasion, unknown to him had spent its force, and General LEE signalized the beginning of his retrogade movement, by ordering a concentration of his three corps at Cashtown. MEADE, still unaware of LEE's position, on the 28th determined upon Frederick as his first objective. His line of march to that point ran in a northeasterly direction, and the cavalry divisions were placed, BUFORD on the left, KILPATRICK in advance and GREGG on the right of the advancing army. KILPATRICK was detached from the column on the 28th and turned to the east with a view of intercepting STUART. This task should properly have fallen to General GREGG, and such would have been the case had that officer not been delayed from pursuing — or even from starting in pursuit — by an unfortunate encounter with a column of infantry, which blocked his way for some hours on the morning of the 28th. It therefore fell to KILPATRICK, who pushed forward to the vicinity of Littlestown, seven miles from Hanover, where he encamped on the night of the 29th. STUART, as we have seen, had halted that night at Westminster, ten miles from Hanover.

STUART seems to have been aware of KILPATRICK's presence, but KILPATRICK does not seem to have been so well informed as to his adversary's movements; for, early on the morning of the 30th, he pushed on through Hanover, where his rear was attacked by STUART's advance as it entered the town. KILPATRICK thus failed to take advantage of an opportunity that is rarely offered to a general in war — to strike an opponent at a decided and demonstrable disadvantage. STUART's command, worn out with six days and nights of hard work, was stretched out in a long column, endeavoring to protect a train of captured wagons over a mile in length. It cannot be said, in KILPATRICK's defense, that he was not aware of the near proximity of the enemy, for it was his first duty to know, before he encamped on the night of the 29th, whether STUART had yet passed the point on the Hanover-Westminster road, which his own line of march would intersect. Had he known his enemy's position, any attack, however deficient in energy, would have compelled STUART to abandon his captured wagons — *a well directed* attack upon STUART's long line would have resulted in his disastrous defeat, from which he could only have escaped with the loss of a considerable portion of his command. I regret to say that neither course commended itself to General KILPATRICK.

His adversary, however, was more enterprising. He was aware, as we have seen, of KILPATRICK's presence, and he made his dispositions accordingly. His first endeavor was to escape annihilation; should he be

so fortunate as to succeed in that, his desire was to save a portion, at least, of his captured wagons. On the morning of the 30th, STUART put his brigades in march in the following order: CHAMBLISS took the advance, followed by the wagon train, which in turn was followed by HAMPTON, as rear guard. FITZ LEE's brigade marched on the left flank of the column —the side from which KILPATRICK was expected to appear. Had such an attack been made, this disposition would have been a good one, as it would have placed Lee in an advanced line, with the other brigades in echelon, to his right and left. But this was not to be. KILPATRICK at daybreak, pressed on through Hanover, where his rear was attacked by CHAMBLISS. For this particular encounter — which was the last that would have been predicted as likely to occur — the Confederate disposition was not a good one. It required too long a time to deploy on the advanced brigade, and enabled FARNSWORTH, who commanded KILPATRICK's rear guard, to repulse the attack. This he did, though with considerable difficulty.

KILPATRICK formed his brigades into line of battle, a little to the south of Hanover, but did not assume the offensive. STUART confronted him until dark, when he withdrew, by his right, and resumed his march, via Jefferson toward York, where he expected some tidings of EWELL. From Jefferson he pushed on, via Spring Forge, to Dover, whence, after a short halt on the evening of July 1st, he pressed on toward Carlisle. He found the place in the secure possession of the Federals, and, hearing that the Confederate army was retiring in the direction of Gettysburg, he turned back, and by a night march, reached Hunterstown on the morning of July 2d. KILPATRICK, who had lost touch of the enemy on the night of the 30th, marched on an interior line, via Abbottstown and Berlin, to Heidlersburg, where he turned to the southwest in the general direction of Gettysburg. At Hunterstown he encountered the rear of STUART's retiring column under HAMPTON. After a combat lasting all day, both parties bivouacked upon the lines which they occupied at nightfall. At dawn on July 3d, HAMPTON withdrew and joined the main body. STUART, with the brigades of LEE and CHAMBLISS, reached Gettysburg on the evening of July 2d, and took post in the rear of the Confederate left.

This bold ride of STUART's has been much discussed. In the opinion of military men it has always been regarded as a useless and unwarrantable, though brilliantly executed undertaking. He eluded successfully the numerous detachments that were set in motion to intercept him; he created such consternation in the minds of the authorities in Washington as to cause the telegraph wires to fairly burn with the orders and appeals that were sent in every direction, to fall upon him or drive him out of Maryland. He captured a number of wagons and a quantity of supplies, the loss of which was not felt in the Federal army. But he exhausted

the strength of his men and animals in a long, tedious and useless march; he gained no information of any practical value to General LEE, and he was absent from the army at a time when his skill, enterprise and ability would have enabled him to render most important services to the Confederate cause, services which I need hardly say no other commander was capable of rendering.

With a word as to the cavalry that remained with the Confederate infantry I will bring this portion of the narrative to a close. The brigades of ROBERTSON and JONES were left behind by STUART, and accompanied the Confederate army across the Potomac. Their orders were from STUART, and were given to ROBERTSON in writing by that officer before his departure. They were so explicit, and define the duty of a body of cavalry, situated as was ROBERTSON, so clearly and accurately, as to be worth citing in full.

HEADQUARTERS CAVALRY DIVISION,
ARMY NORTHERN VIRGINIA,
June 24th, 1863.

Brigadier General B. H. Robertson, Commanding Cavalry:

GENERAL: Your own and General JONES' brigades will cover the front of Ashby's and Snicker's Gaps, yourself, as senior officer, being in command.

Your object will be to watch the enemy, deceive him as to our designs, and to harass his rear if you find he is retiring. Be always on the alert; let nothing escape your observation, and miss no opportunity which offers to damage the enemy.

After the enemy has moved beyond your reach, leave sufficient pickets in the mountains and withdraw to the west side of the Shenandoah, and place a strong and reliable picket to watch the enemy at Harper's Ferry, cross the Potomac and follow the army, keeping on its right and rear.

As long as the enemy remains in your front in force, unless otherwise ordered by General R. E. LEE, Lieutenant-General LONGSTEET, or myself, hold the gaps with a line of pickets reaching across the Shenandoah by Charlestown to the Potomac.

If, in the contingency mentioned, you withdraw, sweep the valley clear of what pertains to the army and cross the Potomac at the different points crossed by it.

You will instruct General JONES from time to time as the movements progress, or events may require, and report anything of importance to Lieutenant-General LONGSTREET, with whose position you will communicate by relays through Charlestown.

I send instructions for General JONES, which please read. Avail yourself of every means in your power to increase the efficiency of your command and keep it up to the highest number possible. Particular attention will be paid to shoeing horses and to marching off of the turnpikes.

In case of an advance of the enemy you will offer such resistance as will be justifiable to check him and discover his intentions, and if possible you will prevent him from gaining possession of the gaps. In case of a move by the enemy upon Warrenton, you will counteract it as much as you can, compatible with previous instructions.

You will have with the two brigades, two batteries of horse artillery.

Very respectfully, your obedient servant.

J. E. B. STUART,
Major General Commanding.

Do not change your present line of pickets until daylight to-morrow morning unless compelled to do so.*

*Century War Papers, part 19, p. 253.

These orders fixed ROBERTSON's responsibility, subject only to the superior orders of LEE or LONGSTREET. They imposed upon General ROBERTSON a most important duty, which it is necessary to understand, in order to appreciate his responsibility. When STUART left on his *detour* of the Army of the Potomac, HOOKER's forces were massed at Edwards Ferry for the purpose of crossing the river at that point. The main body of the Confederate army was on the north bank of the Potomac, on its way to Pennsylvania. It was still possible, however, for HOOKER to pass quickly to the west, enter the Shenandoah Valley, and place himself across LEE's line of retreat. To prevent this by giving timely notification of any such movement on HOOKER's part, STUART directed ROBERTSON to establish a line of outposts, facing south and east, extending from Winchester, via Charleston, to the Potomac at Harper's Ferry. This order contemplated a line of vedettes nearly thirty miles in length. A strict observance of this order would have, and probably did, carry ROBERTSON out of touch with the main body of LEE's army If General LEE desired ROBERTSON to pursue any other course of duty, or to operate elsewhere, he should have given orders accordingly. Failing to do this, the responsibility for the failure to make proper use of these two brigades rests, not with General ROBERTSON, but with General LEE

We will now return to the divisions of BUFORD and GREGG, which we left, the former covering the left, and the latter the right, of the advancing Army of the Potomac. The line of march of this army after crossing the river, was at first in a northeasterly direction. After passing Frederick its course was changed to one more nearly due north. This change of direction, and the detachment of KILPATRICK, changed, somewhat, the positions and duties of BUFORD, and GREGG, bringing the former to the front, and the latter to the right rear, of the advancing columns. MEADE vaguely knew that the Confederate infantry was in Pennsylvania, to the north, and in Maryland to the northwest, but whether the main body of the enemy was in Pennsylvania or to the west, in the vicinity of Hagerstown, he did not know; and it was necessary to ascertain this fact in order to enable him to effect a concentration.

On June 28th the several corps of the Army of the Potomac were stationed as follows: the 12th at Berlin, on the Potomac; the 1st and 11th at Middletown; the 2d, 3d and 5th at Frederick. BUFORD was in the Catoctin Valley, beyond Middleton, on the Frederick and Hagerstown road; GREGG on the Little Monocacy, to the east of the Point of Rocks, and KILPATRICK on the main Monocacy, a few miles north of Frederick. It was MEADE's purpose on the 29th to push forward his infantry to the line of Pipe Creek, but to do this, it was necessary, as we have seen, that he should know whether the Cumberland Valley, below Hagerstown, was occupied by the enemy. This duty was entrusted to BUFORD.

On the morning of June 29th that officer detached the Reserve Brigade, under MERRITT, to occupy Mechanicstown and protect the division trains. BUFORD himself, with the brigades of GAMBLE and DEVIN, then passed rapidly through Turner's Gap into the Cumberland Valley. Turning to the north he skirted the western base of the Blue Ridge and passing Cavetown and Ringold, encamped at Fountain Dale. At dawn on the 30th he pushed on through Fairfield and approached Gettysburg at about 10 A. M. HILL, who had bivouacked near Fairfield on the night of the 29th on his way to the point of concentration at Cashtown, detached PETTIGREW's brigade of HETH's division to occupy the town of Gettysburg, but PETTIGREW withdrew at the approach of the Federal cavalry. BUFORD, whose duty it was to observe rather than to engage the enemy's infantry, withdrew in the direction of Emmittsburg and reported the presence of a force of Confederate infantry to General REYNOLDS. At Emmittsburg he was directed by General PLEASANTON to advance and occupy Gettysburg. This he did on the afternoon of June 30th. Appreciating at once the importance of the position and the necessity of securing it, he advanced about a mile and a half beyond the town and deployed his division: placing GAMBLE's brigade on the left, across the Chambersburg road, and DEVIN's on the right, to cover those leading to Mummasburg and Carlisle. "GAMBLE threw out his scouting parties towards Cashtown and DEVIN towards Hunterstown, which scouted the country, capturing stragglers from the enemy, from whom important information was obtained. BUFORD now became satisfied that the mass of the rebel army was converging towards Gettysburg and that heavy columns were in close proximity."*

The honor of being the first to discover the strategic advantages that combined to determine the vicinity of Gettysburg, as the site of an important battle has rested first with one and then with another of the corps commanders of the Army of the Potomac Neither MEADE nor LEE seem to have had anything approaching an exact knowledge of its great strategic value, and it is altogether probable that on the morning of the 1st of July neither general knew more than that it was a place from which ten roads diverged, and that it was for that reason an important point to occupy. Each general was conducting his operations with but little accurate information as to the movements of the others. LEE had determined upon Cashtown as a point of concentration, and MEADE seems to have looked upon the line of Pipe Creek as a position having many claims to consideration. In the light of what is now known it seems to me that there can be no escape from the conclusion that General BUFORD is fully, completely, and beyond all manner of doubt, entitled to the credit of the selection. It is fortunate that we have an expression of his

* BAKER's "Battle of Gettysburg," p. 55.

own opinion upon the subject. It will be found at page 55 of BATES' "Battle of Gettysburg," and is so pertinent and important as to be worthy of citation. "A lieutenant who was signal officer of BUFORD's division, reports the conversation of the chiefs on the occasion. On the night of the 30th he says General BUFORD spent some hours with Colonel TOM DEVIN, and while commenting upon the information brought in by DEVIN's scouts remarked 'that the battle would be fought at that point,' and that 'he was afraid that it would be commenced in the morning before the infantry would get up.' These are his own words. DEVIN did not believe in so early an advance of the enemy and remarked that he would take care of all that would attack his front during the ensuing twenty-four hours. BUFORD answered 'No, you won't; they will attack you in the morning and they will come *booming* — skirmishers three deep. You will have to fight like the devil to hold your own until supports arrive. The enemy must know the importance of this position and will strain every nerve to secure it, and if we are able to hold we will do well." Upon his return, he ordered me, then first lieutenant and signal officer of his division, to seek out the most prominent points and watch everything; to be careful to look out for camp-fires, and in the morning for dust.

And BUFORD was not mistaken. From 8 until 10 A. M. his two small brigades, with CALEF's battery of the 2d Artillery, held their ground against the most energetic and well directed attacks of HETH's division of Confederate infantry. At 10, General REYNOLDS arrived with the advance of the 1st Corps, but it was *not* until nightfall that it was deemed safe to permit the command of BUFORD to be withdrawn from the line of battle. On the following morning, the division was posted, for a time, at the Round Top, to the left and rear of the Union line. A little later in the day it was withdrawn and directed to Westminster, thus uncovering the left of the Army of the Potomac.

This movement, which seems to have been a mistaken one, deprived the left of MEADE's line of its cavalry. To remedy the error, KILPATRICK, FARNSWORTH's brigade of his division,* and the Reserve Brigade under MERRITT, moved up, on the morning of the 3d, and took post at Little Round Top, connecting with the left of the 2d Corps. Here both MERRITT and FARNSWORTH were heavily engaged on the afternoon of the last day of the battle. After the repulse of PICKETT's charge, General KILPATRICK ordered FARNSWORTH to attack an angle of the Confederate line, near its extreme right. The ground in KILPATRICK's immediate front was broken and irregular, covered with boulders and intersected by walls and fences to such a degree as to make it extremely unfavorable to the mounted employment of the arm, but FARNSWORTH, having drawn

* CUSTER's brigade was stationed on the Hanover road and so fell under GREGG's command on the following day.

the attention of his superior to that fact, in a manly and dignified protest against a rash and ill-considered order, placed himself at the head of his command and rode gallantly to his death.

We have seen that BUFORD, when he started on his *detour* through the Cumberland Valley on June 29th, had left the Reserve Brigade, under MERRITT, at Mechanicstown. Here the brigade remained from June 29th to July 1st, protecting the division trains and maintaining a line of outposts along the road from Hagerstown to the eastern slopes of the Catoctin mountains. This was done with the view of preventing a turning movement, and of giving timely warning of any attempt, on the part of General LEE, to withdraw by his right flank. This duty precisely resembled that imposed on ROBERTSON, by STUART, in his order of June 23d. On July 2d, MERRITT's line of outposts was moved up to the Emmittsburg-Waynesboro road, and on the 3d he was called in and established on KILPATRICK's left, at Little Round Top.

It will be remembered that GREGG's division was assigned the task of covering the right of the Army of the Potomac in the advance on Gettysburg. The presence of STUART in Maryland, and the delays caused by the occupations of the roads by columns of infantry, having the right of way, had kept this division farther to the rear than had been anticipated or intended. On the night of June 27th, GREGG entered Frederick and learned that STUART had crossed the Potomac. On the 28th McINTOSH's brigade was sent east on the Baltimore Pike, and smaller commands were pushed out on the country roads, to the north and northeast, to prevent STUART from obtaining information, and to keep him as far to the east as possible, in the hope of delaying him until KILPATRICK could place himself across his line of march. At noon of the 29th, STUART was reported at Hood's mill. At 4 P. M. GREGG assembled his division at Mount Airy, and at 5 P. M. he set out in pursuit. After a difficult night march, his advance entered Westminster at daylight on the 30th, and reached Manchester at 10 A. M. After a short halt, GREGG pushed on to Hanover, which was reached at 9 A. M. of July 1st. Here he found orders directing him to proceed in the direction of Baltimore, but, before leaving, new orders reached him to send HUEY's brigade to Manchester, and proceed with the rest of his division, by the most direct route, to Gettysburg. At noon of the 2d the division reached the intersection of the Salem Church and Hanover roads, at a point about three miles east of Gettysburg. GREGG's prompt and intelligent obedience of orders had thus brought him, none too soon, into a position from which, on the morrow, he was to render the Federal infantry a service, hardly less important than that rendered by BUFORD on the first day of the battle.

We have seen that STUART, on returning to the main body on the evening of July 2d, had been posted on the York road, to the right and

rear of the extreme left of the Confederate infantry. In arranging the general assault, of which PICKETT'S attack was to be the central feature, General LEE proposed with EWELL'S corps and STUART'S cavalry, to create a diversion in PICKETT'S favor, by a simultaneous advance upon the extreme right of the Union line. General GREGG'S fortunate presence, however, prevented the execution of this manœuvre, for STUART in moving to the place from which on the afternoon of July 3d he was to deliver his attack, encountered GREGG, and, after an obstinately contested engagement lasting from 2 P. M. until dark, was obliged to retire to the position which he had occupied in the morning before the battle began. "This was no mere reconnoissance to develop the position or movement of the enemy. STUART had with him the main strength and the flower of the Confederate cavalry, led by their most distinguished commanders. His force comprised four brigades with twenty regiments and battalions and four batteries. His avowed object was to strike the rear of the Federal army in coöperation with PICKETT'S grand attack upon the centre."*

With GREGG'S successful encounter on the right, the three days of fighting at Gettysburg came to an end. I shall not, at this time, follow the operations of the cavalry during the retreat and pursuit of the Confederate army across the Potomac into the valley of Virginia: the campaign ending where it began, in the dense, impenetrable forest growths on the south banks of the Rappahannock and Rapidan.

I will say a word in closing as to the lessons taught by this campaign. In the first place, what may be called the "science of outposts," was developed as it had not been before in the history of war. Up to this time the practice had been to maintain a chain of infantry outposts along the front and flanks of an army in the vicinity of the enemy. Cavalry had been neither freely nor boldly used, and outpost duty had, as a rule, been timidly and inefficiently performed. Within the lines all was believed safe; beyond the outposts, not only was it "enemy's territory," but the country was presumed and believed to be actually filled with the troops of the enemy. In the two great wars just preceding our own, in the Crimea and in Italy, this state of the case was true to a remarkable degree. This was largely due to the fact that the cavalry had been fractioned up and distributed among the larger units of infantry. The same thing was attempted in the Army of the Potomac, but after a year's experience the attempt was abandoned; the cavalry was withdrawn from the infantry corps and concentrated first in a division, then a corps of three divisions, acting under the orders of the commanding general. In a word the same principle was applied in its organization and employment that General HUNT labored so successfully to introduce into the organization of the artillery. In the Army of Northern Virginia, the cavalry had been isolated from the first, and was trained in outpost work — sometimes to the neglect of its proper cavalry instruction. This course was perhaps necessary, but it impaired the efficiency of the Confederate cavalry whenever it was called upon to meet the Federal cavalry *mounted*. The result was that the latter steadily improved, while the former remained stationary, if, indeed, it did not decrease in effectiveness towards the close of the war.

* No 21, "Battles and Leaders of the Civil War," p 436

In this campaign we have the first example of the outpost work of an army being done "by wholesale" by the arm best fitted for the task. The cavalry of one army was employed to locate the main body of the enemy, and incidentally to examine the country between the contending armies. The cavalry of the other army endeavored to prevent this information from being obtained, by interposing itself as a screen between its own main body and that of the enemy. In the performance of these duties we have seen that there were frequent collisions. If the tactical details of these encounters be carefully and thoroughly studied, I think the fact will appear, that while there was much fighting on foot, it was not so generally successful as has been supposed. I think the fact will also appear that that command was most frequently and uniformly successful which was most skillfully handled *as a mounted force* — dismounting only to accomplish a temporary purpose, or, as in BUFORD'S case at Gettysburg, when it was necessary to oppose infantry, or to hold a point of great strategic importance until the infantry could arrive.

ORGANIZATION OF THE CAVALRY CORPS OF THE ARMY OF THE POTOMAC.

MAJOR GENERAL ALFRED PLEASANTON, COMMANDER.

First Division — Brigadier General JOHN BUFORD.

1st Brigade.	*2d Brigade.*	*Reserve Brigade.*
Colonel WILLIAM GAMBLE.	Colonel T. C. DEVIN	Brig. Gen. WESLEY MERRITT
8th Ill. Cavalry,	6th N. Y. Cavalry,	1st U. S. Cavalry.
12th Ill. " (4 Cos.),	9th N. Y. "	2d U. S. "
3d Ind. " (6 Cos.)	17th Pa. "	4th U. S. "
8th N. Y. "	3d W. Va. " (2 Cos.).	6th U. S. "
		6th Pa "

Second Division — Brigadier General D. McM. GREGG.

First Brigade.	*Second Brigade.*	*Third Brigade.*
Colonel J. B. McINTOSH	Colonel PENNOCK HUEY	Colonel J. I. GREGG.
1st Mo. Cavalry,	2d N. Y. Cavalry	1st Maine Cavalry
1st Mass. "	4th N. Y. "	10th N. Y. "
1st N. J. "	6th Ohio "	4th Pa "
1st Pa. "	8th Pa "	16th Pa "
3d Pa. "		

Third Division.—Brigadier General J. KILPATRICK.

First Brigade.

Brig. Gen. E. J. FARNSWORTH.
5th N. Y. Cavalry,
18th Pa. "
1st W. Va. "
1st Va. "

Second Brigade.

Brig. Gen. GEO. A. CUSTER.
1st Michigan Cavalry,
5th Michigan "
6th Michigan "
7th Michigan "

Horse Artillery.

First Brigade.

Captain J. M. ROBERTSON,
9th Mich. Battery,
6th N. Y. "
B and L, 2d U. S. Artillery,
M, 2d U. S. Artillery.

Second Brigade.

Captain J. C. TIDBALL
E and G, 1st U. S. Artillery,
K, 1st U. S. Artillery,
A, 2d " "
C, 2d " "

ORGANIZATION OF THE CAVALRY DIVISION OF THE ARMY OF NORTHERN VIRGINIA.

MAJOR GENERAL J. E. B. STUART, COMMANDER.

Brig. Gen. FITZHUGH LEE'S Brigade.
1st Md. Batt. Cavalry,
1st Va. Cavalry,
2d Va. "
3d Va. "
4th Va. "
5th Va. "

Brig. Gen. WADE HAMPTON'S Brigade.
1st N. C. Cavalry,
1st S. C. "
2d S. C. "
Cobb's Legion (Ga.),
Jeff Davis' Legion,
Phillips Legion (Ga.),

Brig. Gen. W. H. F. LEE'S Brigade.
2d N. C. Cavalry,
9th Va. "
10th Va. "
13th Va. "

Brig. Gen. A. G. JENKINS' Brigade.
14th Va. Cavalry,
16th Va. "
17th Va. "
34th Va. (Batt.),
Jackson's Va. Battery.

Brig. Gen. B. H. ROBERTSON'S Brigade.
4th N. C. Cavalry,
5th N. C. "

Brig. Gen. W. E. JONES' Brigade.
6th Va. Cavalry,
7th Va. "
11th Va. "
35th Va. (Batt.).

Horse Artillery Battalion.—Major R. F. BECKHAM.

Breathed's Va. Battery,
Chew's Va. "
Griffin's Md. "
Hart's S. C. Battery,
McGregor's Va. Battery,
Moorman's Va. "

Imboden's Command.—Brigadier General J. D. IMBODEN.

18th Va. Cavalry (?),
62d Va. (Mtd. Inf.),
Va. Partisan Rangers,
Va. Battery.

TRANSLATIONS.

LETTERS ON CAVALRY, BY PRINCE KRAFT ZU HOHEN LOHE INGELFINGEN.

BY COLONEL R. P. HUGHES,
INSPECTOR GENERAL U. S. A.

FIRST LETTER.—GENERALITIES.

I FIND myself a good deal embarrassed by your question concerning the value of cavalry, upon which military writers have given such different opinions since our last war. I feel that being an artillerist I shall not be acknowledged by either the cavalry or infantry as a competent judge. You think, and I must acknowledge that your opinion has some foundation, that as an artillerist I will be able to express an unbiased opinion, and that I have seen so much of cavalry in peace and war, (having commanded a division for seven years with cavalry in my command which I had to inspect and criticise in detail) that my experience must have given me a thorough knowledge of its character. I have a good deal of hesitation in giving written expression to my views, and will consider the question from a birdseye perspective as it presents itself to a division commander who has all arms under him, and I will enter into cavalry details only so far as may be absolutely necessary.

I must first remark that I regret from the bottom of my heart the intemperate contention which has existed at times upon this subject; because, such hostility between comrades of the same army, who are called upon to help and strengthen one another when it concerns the attaining the great purpose, the defending of the fatherland, cannot lead to profitable results. In war times the infantryman feels himself comfortably secure when he knows his cavalry is four or five miles in front, and will bring him timely and reliable information; he knows that he can sleep quietly that night under shelter because the enemy is so distant that a

nocturnal attack is not possible. On the other hand in war the cavalryman utters a sigh of relief when he sees his infantry in possession of a defile towards which he is being driven by a numerically superior enemy, because he will find protection and safety behind it. Such experiences call forth a friendship and comradeship which not unfrequently lead to an intimate brotherhood between the different arms of the service. Who is not familiar with the story of the Heurichs in the war for freedom? Who does not know that the Hussars and Jägers of the Guard in Potsdam call each other "Couleur," although their coats are of different colors? This feeling of unity continues for some time after the close of hostilities. At last the pen assumes the mastery of events, and founds statements upon intelligence and reports which are often defective, and sometimes untrue, and at best are never reproductive of the complete and exact picture of the personal impressions. (The most objective historian can only represent that which really happened, not how it appeared to the actors at the time of the act.) Assertions and claims which occasionally go to the length of the annihilation of one of the arms, soon destroy all feeling of good fellowship between the different arms, to the great detriment of the army as a whole.

It is necessary, therefore, to consider things in their greatest objectivity, and carefully to avoid extreme statements which may occasionally make their appearance. Many have gone so far as to deny the cavalry their *raison d'être*. We have also seen that a writer was ready to establish the fact that a cavalryman costs more than ten infantrymen, and that Prince FREDERICK CHARLES' army on the Loire, in 1870, would have conquered the army much sooner if he had had 200,000 infantry instead of the 20,000 cavalry which he did have. As though the army were the result of a financial transaction and was to be bought or hired "on change," as were the armies of the Italian Condottieri in the latter part of the fifteenth century. But without objecting to the foregoing calculation (which, however, is possibly correct), he who makes that assertion has not taken into consideration the fact that when an army is created by requiring service from all, and every serviceable man takes part in the war, it is not possible to obtain 200,000 infantry for the 20,000 cavalry, because the serviceable men are not to be had. The 20,000 cavalry could be transformed into 20,000 infantry and thereby leave some money in our pockets, of which the victorious enemy would soon relieve us, as his superiority in cavalry would enable him to keep himself much better informed of our movements than we of his, and thus give him a great strategic superiority which would result in the destruction of our army.

Other writers have defended themselves against attacks of this kind with much vigor, and, at times, have shown justifiable indignation, and we are not surprised that under great provocation they have occasionally

gone too far, and have represented the capabilities and worth of the cavalry in too bright colors. None of them have yet arrived at the conclusion (from the statement made by NAPOLEON III on the 2d of September, 1870, to our king, "Your cavalry and your artillery have alone secured this great result") that the infantry must be done away with, but they suggest, with a tone of sadness, that the cavalry should be organized separately from the infantry, and that then the most brilliant results might be expected from the raids and attacks of this independent cavalry.

At the beginning of a war these controversies between extremists as to the relations and duties of the different arms of the service are productive of baneful results. If our infantry commander accepts the claims and statements of the cavalry and fosters expectations of it which are not fulfilled when the time for action comes, he is disagreeably and sensibly surprised, and a commander who is surprised in a campaign is already half beaten. If he shares the unfavorable opinion of the capabilities of cavalry as represented by some writer whom he has read, who was inimical to that arm, then he will not apply it, is not in harmony with it, and unity of action is rendered impossible, and failure is the natural result.

Controversy can only cause mischief. The best results are only secured by both arms acting in entire harmony: they must become so thoroughly acquainted with one another on the drill field as to gain a clear understanding of how each can make application of its special and characteristic strength to re-enforce the characteristic weakness and compensate for the deficiencies of the sister arm.

The views upon the value of and the manner in which to apply the cavalry are much more at variance than they are upon the work and application of the other arms.

This is probably the result of suggestive comparisons between victories gained by the cavalry in earlier wars and the small number of attacks of cavalry masses in late wars. In the three Silesian Wars of the eighteenth century there was scarcely a battle in which the final and deciding thrust was not given by the cavalry, or, at least, *die tenne fegte* (it swept the field). One very decisive battle (Rossbach) was fought almost entirely by cavalry on the side of the victors. The history of the war of 1870-71 gives account of more than twenty great decisive battles, and of a great number of actions and affairs in which the number of troops engaged was greater than in the great battles of the Seven Years' War, and in all these struggles of powerful masses, attacks of great masses of cavalry have only occurred on four occasions: On the part of the Prussians at Mars-La-Tour; on the part of the French at Woerth, Mars-La-Tour and Sedan, and excepting these instances there was but one attack (Loigny) which amounted to the strength of a full brigade. These facts have caused many writers to represent the cavalry as worthless as a rule, and the cav-

alry writers, in their longing for the glorious days of Hohenfriedberg, Rossbach, Leuthen, Haynon, Liebertwolkwitz and Laon, are disposed to attribute their failure in the late wars rather to faults in leading and applying their arm of the service than to grant that the date of glorious days for the cavalry is past. When I think of the feeling with which we looked upon the cavalry in those episodes in our late wars in which I participated, and from them infer what value we would have put upon the cavalry in the other actions, then I must reject the premises and conclusions of all such writers, of both arms, and most emphatically maintain that the cavalry was applied upon proper principles in our last great war, and had an equal share with the other arms in the result obtained by our army in the campaign of 1870–71. I am prepared to prove this assertion.

It is true that no single regiment returned from an attack with sixty-six captured colors as at Hohenfriedberg, because the cavalry is not now so infinitely superior to the other arms as it was at the time of FREDERICK THE GREAT. The improvements in fire arms has re-established the equilibrium, and has again confined the cavalry to its legitimate sphere, i. e., to those duties which require swiftness of movement in their accomplishment. It is true that the pursuit of the enemy by the cavalry after most great battles has failed in its results. The enemy found shelter behind fortress walls, and no one expects cavalry to take fortresses. When the whole army of the enemy capitulates there is no occasion for a cavalry pursuit. After other great battles which occurred during the winter season the chief element of the cavalry, velocity of movement, was destroyed by the ice, and this prevented it from making an effective pursuit. After other battles, however, an energetic pursuit was made and an abundant harvest reaped. I am far from maintaining that the application, leading and performances of the cavalry were at all times what they should have been. Nothing that man does is perfect. Our cavalry has no more sins of omission and commission to repent of in the part it took in the campaign of 1870–71 than have the infantry and artillery, and the excellent spirit that animated it is clearly seen in the readiness with which faults were acknowledged, and in the zeal with which they entered into a scientific and careful examination of themselves, after the campaign, in order to fix the seat of their past faults and to apply the necessary corrections.

It is not necessary that one who does not belong to the cavalry should enumerate their faults and expose them, and I will pass them over. Every one should sweep in front of his own door. In instruction and leading, the cavalry undoubtedly has much greater difficulties to overcome than the other arms, and these difficulties increase in the same ratio as the duties required of the cavalry increase in importance. *These duties have now reached such a height that cavalry officers must in time of peace make greater sacrifices in means and health, and do more studying than the officers of the other arms, if they will satisfactorily accomplish the work which now belongs to their arm of the service.*

In earlier times it sufficed to have a strong arm, a good sword, a stout heart, to be a good rider, and to have a noble horse, to make a capable cavalryman. These are, in our day, elementary, self understood conditions. The improvements in fire arms have so increased the difficulties with which the cavalry has to contend in instruction and leading that it constantly demands increased exertion and talent to overcome them and to meet the requirements of the cavalry of the present day.

The tasks of the cavalry of the present day are the same as those of the past. A few of the most brilliant have fallen somewhat into the shade, while some of the less conspicuous but equally important duties, of which little mention is made, have come to the front. The manner of executing their tasks has become more difficult.

We know how zealously the cavalry have worked to fit themselves for these heightened requirements. The new cavalry tactics, the new instruction in equitation; the cavalry practice marches are proofs of it. I only mention these three things because they can be considered as the latest and most troublesome labors of the cavalry.

I would not be understood as acknowledging that the entire development of cavalry has been accomplished. I am of the opinion that much can yet be done in the way of training, instruction, leading, application, arrangement and method of exercises, with fewer demands upon the physical forces, which will more surely secure the results sought. In my opinion the possible modifications and improvements do not lie in the hands of the cavalry itself; they relate to the application of it, the plan and direction of the exercises, which, as a rule, are established and ordered by non-cavalryists.

I also doubt whether a complete organic separation of the cavalry from the infantry, and organizing it into permanent, independent divisions, (these divisions to be grouped into cavalry inspections, with an inspector general of cavalry at its head, which is so strongly recommended by some writers), would give salutary results. Besides, the duties which the cavalry has to perform, result from the demands of the army as a whole, and the work is rendered easier when there is an intimate union of all arms. There would be greater danger that the cavalry would fall into the habit of taking a one-sided view of the situation if it should be entirely separated from the other arms. By itself, the cavalry cannot always secure satisfactory results. The time has passed when whole armies could be made up of mounted men. The cavalry, likewise the artillery, can only obtain the best results so long as they

remain constantly conscious that they are only auxiliaries to the infantry. The *infantry is the army and makes use of cavalry as well as artillery.* The cavalry must act for the infantry, and it can only appreciate the duties which the infantry requires of it by being thrown in constant contact with it, while on the other hand, it is only by constant union with the cavalry that the infantry is enabled to understand just what services can be demanded of it, and what it is capable of doing. With us the general inspector of cavalry is only sent to the great cavalry exercises for the purpose of inspecting them, and submits his report to the general headquarters, and, in my opinion, this is the wisest arrangement. Perhaps they might make a few cavalry inspectors who would be subject to his orders, and who, under his instructions, would superintend the instructions of the cavalry organizations, and who would become the commanders of cavalry divisions in case of war.

Without going to the extreme of wishing to abolish the cavalry it is not unusual to hear, or see it argued that the strength of this arm should be reduced because it has become less important than it was in earlier times. There has been much said and written as to the proportion which should exist between the cavalry and infantry. This numerical relation has been different at all times and in all armies. I hold the fixing of such a theoretical normal ratio as one of the most ancient of theories. When service is general and obligatory the only correct rule in organization is conditioned upon the being able to apply the whole strength of the nation with promptness at the right moment; and the ratio is determined by the condition of the fatherland. The duties of the cavalry are so comprehensive, and so specially important at the first moment of hostilities that one cannot have too much of it in readiness for action. Every serviceable horse as well as every serviceable man must be available for the defense of the fatherland, and the industry of horse breeding in some measure determines the number of cavalry in the army. An organization which would render it necessary for us to purchase abroad any appreciable number of horses could not be maintained for any considerable time.

THE PART THE CAVALRY HAD IN THE RESULTS OF 1870–71.

SECOND LETTER.—RECONNOISSANCES.

IF it seems to you that the assertion in my last letter, that our cavalry had as great a share in the successes of our army in the campaign of 1870 and '71, as the other arms, is in need of any substantiation, I will try and provide you with the proofs.

I could confine myself to the quoting of a single sentence from the history published by the Great General STAFF, to-wit: "The numerous German cavalry upon whose clear and reliable reports the decisive resolutions of the army commanders were based." * * *

The results showed how securely these decisions were grounded.

But the information obtained by the cavalry constituted only a portion of their work and application on the front of the army. They inundated the enemy's territory for miles; yes, even several marches, in front of the main body of infantry. Everyone finds that quite natural now. Of course, that is what the cavalry is for, and yet in 1870, such an application of the great mass of cavalry was entirely new. Yet, after it has been once done, it is quite easy to copy. In earlier days the great mass of cavalry was held back as reserve cavalry for some special attack, and only the light cavalry was sent in advance. In those days the Prussian cavalry was not numerically superior to that of other armies. In the first two Silesian wars FREDERICK THE GREAT found himself surrounded everywhere by the enemy's hussars, who reconnoitered him and blindfolded him; and in the Seven Years' War the light cavalry of Austria was still, in minor affairs, superior to the hussars which the king had organized in the meantime.

In the wars at the beginning of this century even the great NAPOLEON never made such use of his cavalry as did our army commanders in the last war, and, notwithstanding the great experience of the French, we have often seen infantry carelessly marching at the head of their great armies. The surprise of HAYNAU is a good example of this experience. In our War For Freedom individual leaders made extensive use of light cavalry, as is shown by the acts and dispositions of VON KATZLER, but the great mass of the cavalry was left in the rear. The idea of keeping a heavy cavalry mass in reserve for the purpose of breaking the enemy's line at the opportune moment continued in force until after the close of the war of 1866, in which both sides are seen to have held a mass of cavalry in reserve, which, as has been well said, was intended to act as a sort of torpedo and give the decision at the last moment.

The expression "reserve cavalry" was a very unfortunate one. One would scarcely believe that a bare word could exercise such influence. And yet, it is so.

A command which is once designated as and given the name of, "The Reserve," will seldom be sent to the front by the commander. What kind of a "reserve" would it be if applied at the opening of an action?

On the 18th of March, 1869, I made the suggestion, in an article read before the Military Society at Berlin, that our "reserve" artillery should be applied to preparation of the attack, and a French writer banteringly asked, "*Qu'est-ce que c'est que cette reserve qui n'est pas une reserve?*" Therefore the name Reserve Cavalry was done away with, and Cavalry Division substituted, just as the name Reserve Artillery was changed into Corps Artillery.

Upon the opening of hostilities in 1870 we do not see the cavalry employed in the first days of the campaign as it was a little later when all France was in a state of terror from the Prussian Uhlans Although France declared war on the 19th day of July, yet upon our side only bold rides of single patrols were made until the first part of August. On the 5th of August the 4th Cavalry Division was sent forward on an extended reconnoissance toward Hagenau and Reichshofen, and it was through this division that the fact was established that the enemy had concentrated a strong force behind the Sauer. Nevertheless, during the battle of Woerth the 4th Cavalry Division was held at Schonenburg, about eight miles in rear of the line of battle, apparently in the sense of a cavalry reserve, because the arrangements made for the 6th of August were evidently based upon the supposition that there would be no battle on that day, but that our army would employ that day in closing up and changing front to the right. Granting that the line of the Sauer was strongly occupied by the enemy, this division of cavalry could not find employment in front of the enemy.

The victories of Woerth and Spicheren first gave the cavalry divisions the basis for their subsequent activity, and the idea suggested above, that the cavalry should be employed in front of the army, soon found general realization. Thus a new thought is like a spark of fire, small in its inception but of very rapid growth.

For example: We see on the 7th of August, as the Guard Corps marched from Homburg to Bliescastel-Asweiler, that as it neared the French border the cavalry division belonging to the corps was placed at the rear of column. The order of the day only permitted it to push its head of column as far as Webenheim, in front of which stood the entire Second Division of Infantry. The First Infantry of the Guard was in Assweiler. On this day an officer and four men of the Brunswick Hussars captured Saargemund, in which town two companies of the enemy's infantry were found. The lieutenant threatened to bombard the town with his troops (four men), and by verbal agreement the mayor dismissed the companies from the town and then surrendered it. In this way that very important defile fell into our hands without firing a shot.

After we crossed the French border on the 8th of August the Guard Corps threw its cavalry to the front for the first time, but only from four to five miles (to Great Rederchingen-Achen, while the corps remained at Moranville). To be sure, our corps only succeeded in coming into the front line on the 7th; up to that time we had been moving to the front in long marches on the main road and in rear of another corps, and even on the 7th the Guard Cavalry Division could not be developed in front of the corps, because the field in front of the first and second armies was already completely occupied by the 5th and 6th Cavalry Divisions.*

From the 8th of August on, with the exception of such interruptions as were occasioned by our front having been entirely occupied by other cavalry divisions in their development, the distance at which our cavalry spread itself across the front of the guard increased from day to day.

The Guard Corps reached Oron on the 13th of August, but the dragoon brigade of the Guard was sent forward to Dieulouard, two marches further to the front, where it secured possession of the crossing of the river Moselle and of the railway Metz-Nancy, and forced a railway train to put back, which was coming up with infantry intended for the defense of the crossings of the Moselle.

Thus the communication between Metz and Nancy was interrupted at this point.

The 5th Cavalry Division crossed the Moselle on the same day and scouted the country still further to the front.

Up to this time I have not seen any military or other writer who has made it appear of what vital importance this celerity, by which our cavalry surprised and seized the crossings of the Moselle on the 13th of August, was in our operations. NAPOLEON was not wrong in using the language which he employed in sending a dispatch to Paris a short time previous, to-wit: "The unattackable positions of the Moselle into which he would withdraw the army." When we reached the Moselle from the east we saw a river valley almost two miles in width, which could only be crossed on long, open bridges, which were just wide enough to accommodate vehicles in single column (single track). Upon the opposite side the dominating heights rose fortress-like, and we involuntarily thought of the difficulties with which we should have to contend if the enemy awaited us in a well-chosen position on those heights with this wide depression on his front. But he had not succeeded in reaching these "un-

*The Guard Corps formed part of the second army.—R. P. H.

attackable positions," for, notwithstanding the fact that he had entire *control of a railway running through the Moselle Valley, our cavalry had* forestalled him by making forced marches, which have never been exceeded in length and speed. We ask whether our results would have been so decisive on the 18th of August if our cavalry had let the enemy have time to destroy all the crossings of the Moselle between Metz and Nancy and to have opposed us with infantry and artillery at all points from the dominating heights on the left banks of that river? He had sufficient time up the 13th of August to have done so if he had determined upon such a course on the 7th, on which day it must have become evident to the army commanders how very significant the disasters of Woerth and Spicheren were. He would doubtless have decided upon doing so at once had he known what masses of German troops had been put *in motion towards the crossings of the Moselle above Metz.* But our *cavalry surrounded him in all directions and prevented him from gaining any intelligence of the movements of our masses.* BAZAINE and NAPOLEON have repeatedly stated that our thick veil of cavalry kept them in complete ignorance of the movements of our main armies. On the night from the *11th to the 12th of August our cavalry patrols cut the telegraphic connections* between Metz and Nancy and had also reached Moselle at Pont à Mousson (as well as Nancy).

After the French commander had neglected *until* the 13th of August to destroy the crossings of the Moselle above mentioned, and, through vacillation in deciding whether to strike a blow on the east bank or to withdraw to Chalons, had deferred the *occupation* of those "unattackable positions," the credit is due to our cavalry that *after* the 13th it was no longer possible for him to occupy those positions, and, that the crossings of the Moselle were secured to us.

There are some critics who have charged our cavalry with a want of vigor and enterprise in the pursuit of the enemy after the battle of Woerth. Be it observed, that the twenty-six squadrons engaged in the direct pursuit brought in on the evening of the battle nineteen officers, 1,593 enlisted men, fourteen guns and one standard, while the 4th Cavalry Division was pushed to the front in the morning of the 7th of August and reached Nancy four days later, which, in air line, is seventy-five (75) miles from Woerth, and has to be reached through numerous defiles of the Vosges mountains.

When the enemy is totally defeated and routed, when he has no more troops in condition to offer effective resistance, then it is the duty of the cavalry, by energetic and direct pursuit, to collect the wreckage of the defeated enemy and thus destroy his army. If, however, the victory has been but partial, as was the case on the 6th of August, and whole armies that have not yet been engaged stand behind the beaten troops, as at

Spicheren, then a destructive pursuit of the enemy, by cavalry alone, is not possible. In such cases it is better that the cavalry break through the gaps made in the enemy's position and cause *him anxiety* for his flanks, because he no longer knows what is in rear of this advancing cavalry. This indirect pursuit, as HOFFNER calls it, was executed with noteworthy energy on this occasion, and by its work placed the commander of the armies in position to give directions to the great masses of the army, which had for their objective the entire destruction of the armies of the enemy.

If we would be impartial we must acknowledge that our cavalry from the 6th to the 13th of August, and at the opening of the campaign, displayed a decided and effective activity before the main bodies of the opposing armies had measured their strength, and that the cavalry assisted in no small degree in securing the victory to our colors *before* the day of battle.

The role of our cavalry became far grander, more imposing and decisive from the moment it crossed the Moselle. Although knowing that they must be in the immediate vicinity of the main body of the enemy's army, and although infantry detachments of the enemy had been discovered in the mountainous and wooded country on the left bank of the Moselle, two cavalry divisions (5th and Guard), making a force of sixty squadrons, crossed the river at Pont à Mousson and Dieulouard and pushed into the very heart of the enemy's base of operations, and there deployed, in order to secure definite and reliable information concerning the situation and condition of the main body of the enemy's forces.

On the 14th of August, while the battle of Colombey-Nouilly was going on on the east of the Moselle, a squadron of the dragoons of the Guard (Trotha), while pursuing some French chasseurs, had pushed forward to Toul and had, with assurance which is natural to the cavalry, demanded the surrender of that fortress. In the course of the 15th of August the Guard Corps received orders transferring, temporarily, the Dragoon Brigade to the 10th Corps, and on the 16th of August these troops took an active part in the battle of Mars-La-Tour. One could not well demand greater speed or greater ability of the cavalry, for Mars-La-Tour lies in an air line almost thirty-three miles from Toul.

The movements of the 5th Cavalry Division on the 15th of August were strategically decisive. It moved forward in a northerly direction and located the enemy at Mars-La-Tour. It deployed itself between Jarny and Rezonville, upon the direct line of retreat of the enemy's army, which was 200,000 strong, and boldly bivouacked at Suzemont, Purieux and Xonville, after a light skirmish with the enemy's cavalry, although they were at least nine miles in front of Thioncourt, to which

place an infantry division had been pushed forward as their support, but no other infantry had yet crossed the Moselle.

These movements of the cavalry division were strategically decisive, for it established the fact that a great part, if not the whole, of the enemy's army was still about Metz, and that there was a large force of the enemy bivouacked at Rezonville. Our commanders based their orders and dispositions of troops upon this information.

Can more be asked of the cavalry? It trotted in force around the enemy's army; threatened the line of retreat of an enemy, the greater part of whose forces had not yet been defeated, and, through surprises and sudden appearances, caused uneasiness in the ranks of the enemy, and uncertainty and indefiniteness in his plans; and camped over night in rear of an army of overwhelming strength, and so close to it that the bullets from the infantry rifles struck in their bivouacks. Many writers miss, in the movements of the German cavalry, the raids of the American type; and one of the most distinguished of our cavalrymen grants that our cavalry should have accomplished more in this way in 1870. In what way would such a raid have accomplished more than the 5th Cavalry division did upon the occasion of which we speak? A raid simply as such, and without an objective purpose, should not be permitted. Well may it cause the heart of many a cavalryman to swell with delight when he reads of the great cavalry masses of America, that, when set in motion, would ride for weeks at a time over wide expanses of country, over rugged mountains and blooming valleys, across deep rivers and dense forests; but in all movements there must be a purpose. If this purpose be to threaten the enemy's flanks and rear, to disturb his base and plan of operations, to give reliable information of his strength and position, and the cavalry succeeds in its object in a ride of two days, has it not completely *accomplished its task!* The work of the Guard Cavalry Division was of almost equal strategic importance on the 15th of August, although the results were of a purely negative character, viz: The determining that there was no force of the enemy between us and the Meuse. This enabled the Germans to direct, in their dispositions for the 16th, that all the corps on the Moselle should swing to the north against the enemy bivouacked at Rezonville, without running any risks of being attacked in the left flank. It could attack the enemy who wished to withdraw from Metz to Verdun, and, by engaging him, so delay his movements that dispositions could be made that would render escape impossible.

SERVICES RENDERED BY THE CAVALRY IN THE BATTLES BEFORE METZ.

THIRD LETTER.

MY last letter brought us up to the 16th of August, the day of the great cavalry contests in the last war.

The cavalry, on the side of the Germans which participated in the battles of that day, was as follows:

The 5th Cavalry Division	36 squadrons.
The 6th Cavalry Division	18 squadrons.
The Dragoon Brigade of the Guard	8 squadrons.
The Division Cavalry of the 3d and 10th Army Corps	16 squadrons.
Total	78 squadrons.

The deeds of this cavalry mass will fill any unpartisan and impartial reader with admiration, and much that is profitable can be learned therefrom.

First, twenty-four guns which accompanied thirty-seven squadrons startled the enemy in his supposed security and caused a partial panic, at least in the bivouacks of the cavalry.

They then advanced upon the infantry and made a threatening turning movement, supported by the eighteen squadrons and six guns of the 6th Cavalry Division, which had just arrived. The infantry stood to arms and formed up to defend themselves against this cavalry. Six and a half infantry divisions were employed in forcing it to withdraw upon the support of its own infantry. Thus, according to the strength reported on the field, a force of 8,250 cavalry held a force of 65,000 infantry in check, threatening their flank and line of retreat, until the advancing infantry could come up and take up the action. The course pursued by the cavalry on this occasion in avoiding any objectless attacks must be fully approved, for they obtained their object, the observation and detention of the enemy, without loss. In the days of Hohenfriedberg, Rossbach and Leuthen these fifty-five squadrons would have attacked and ridden down this infantry. It is due to the improvement and increased effect in firearms that the irresistible superiority of the cavalry over the other arms no longer exists, but has been reduced to a state of equality with them.

After our cavalry had been relieved of its unequal struggle with the enemy's main body, by the infantry, for the next two hours it formed the second line in support of the very thin line of our engaged infantry, which from 10 until 12 o'clock pushed the enemy by bold attacks, notwithstanding the fact that he outnumbered it more than two to one.

Here the 3d Army Corps, provisionally supported by the detachment, LYNKER, fought against three French *corps d'armeé*. The advance of the Prussian infantry against such a superior force was so decided that BAZAINE called upon his cavalry to check the advance of the Prussians, and General VON ALVENSLEBEN directed the 6th Cavalry Division to pursue the enemy and complete the victory. Then cavalry attacks of greater and lesser dimensions developed, which prescribed practically the limit of the capabilities of the cavalry against infantry. Attacks were made by both sides with great heroism, advancing infantry was brought to a standstill, yielding infantry was overridden, and guns were captured. But when cavalry came upon infantry intact, especially when it was somewhat covered by the accidents of the terrain, the cavalry could accomplish nothing. It had to fall back out of the range of the enemy's rifles.

During this struggle the French infantry had increased to such an overwhelming superiority that the line of the 3d Corps could think no more of making an offensive attack, but could only do their utmost to maintain their position until the arrival of the 10th Corps. The Prussians then withdrew a part of the cavalry in order to form a second line in support of the infantry, for the infantry was already engaged to the last man. The main portion of the Prussian cavalry was, however, sent forward to protect the left wing, to observe and occupy the attention of two French corps d'armeé which had been deployed in that direction. At this moment Marshal CANROBERT led his corps to the decisive attack.

There was great danger that this attack, through superiority of numbers, would crush the 3d Corps, and there were no guns and no infantry in reserve, while the nearest support (20th Division) was still far to the rear. General v. ALVENSLEBEN ordered the Brigade Bredow to attack in order to relieve the pressure on the 6th Infantry Division. The brigade had six squadrons on the ground and attacked around the left wing from Vionville. The first line of the enemy was overridden, the artillery line was broken through, and men and horses cut down. These horsemen rode through the entire line of battle of the enemy and continued their course until confronted by a far superior force of the enemy's *cavalry* in close formation. Driven back by *this*, it again rode through the enemy's lines and assembled at about the same point from which it began its attack, but fearfully reduced in numbers.

This attack of BREDOW's has been severely censured by many writers. It has been represented as useless, purposeless and resultless; as a purposeless destruction of a matériel that cost the country much money.

Let us consider for a moment the sacrifice made, and the result achieved, in the light of a financial transaction. The entire loss of both regiments, of which three squadrons of each were engaged in this attack, amounted to 409 horses during the course of the 16th of August. Calculating that this entire loss occurred in this one attack (which is not probable, for the brigade undoubtedly suffered some losses in previous attacks of the day), yet the brigade had saved a whole corps d'armeé with a loss of 409 cavalry. With scarcely 800 cavalry it charged a whole corps d'armeé of the enemy, rode down his first line of infantry and cut down the horses of the artillery. It thus crippled for the rest of the day this entire corps d'armeé of the enemy, and this occurred between 2 and 3 P. M.; the movement of the 6th Corps was brought to a standstill and was finally abandoned; at least the French undertook no new attack from Rezonville on this day. Thus considered, the attack of these 800 cavalrymen upon 40,000 men appears not only to have been an act of heroism of the first order, which equals the most celebrated and glorious deeds of all ancient and modern wars, but it obtained a result of rare magnificence with comparatively small loss, and was not a purposeless death-ride which could be compared to CARDIGAN's attack at Balaclava, as many critics are pleased to do.

Again, the cavalry is reproached with having made the attack on this occasion without providing any support; and it is set forth that it would have been much more effective if the line of attack had been followed by a second and third line. That is perfectly true, but it does not justify any reproach being heaped upon the Brigade Bredow. The result would have been very much more substantial if the Brigade Bredow had been followed by 100 squadrons. But there was no more cavalry on hand. Time pressed, and something must be done immediately, and the commanding general availed himself of what he had in hand and on the spot During the contest the Hussar Regiment, No. 11, came up just in time to give the necessary protection to permit the wreck of the Brigade Bredow to assemble. Methinks I hear the critic of the green table ask: "Where were the seventy-eight squadrons" of which mention has previously been made? We know that at about this time the 3d and 4th French Corps came into line near the 6th Army Corps and threatened the left flank of the 3d Prussian Corps. A part of this great mass of cavalry trotted forward, in order to observe the movements of the enemy and to delay his advance. Even the Brigade Bredow was compelled to detach two squadrons in that direction in order to secure their left flank. Besides, instead of holding the cavalry as a second line it was found necessary to distribute it in rear of the very thin fighting line of the 3d Corps, which extended from Vionville to the Bois de St Arnould, a distance of between three and four miles, and upon which it was necessary to be prepared at all points for similar critical moments. A critic will then sententiously announce that a good tactician must understand how to secure the superiority on the decisive point. As a general rule this is correct; but in special cases it is not possible; for instance, in a battle where you

struggle from early morning into the night against an enemy who has three men to your one. In such a case it requires much dexterity to unite sufficient force upon the decisive points to offer an effective resistance to the enemy, generally. The cavalry did not allow itself to fail in anything during this battle. It hastened from one threatened point to another and attacked the enemy whenever it became necessary.

The attack of the Brigade Bredow caused a pause in the course of the action. The French seemed to wait for the results of the turning movement of the 3d and 4th Corps. The Prussians collected and formed the thinned ranks of the infantry of the 3d Corps. The contest was temporarily continued by the artillery.

Meanwhile the 3d and 4th French Corps both pushed forward against the left flank of the 3d Prussian Corps. A few infantry battalions in the Tronville wood, assisted by the cavalry, succeeded in holding the enemy in check for a time, but towards 4 o'clock these troops were driven back across the chausseé, on which the artillery by great exertion was able to maintain itself. At this critical moment the 10th Corps arrived The 20th Infantry Division wrenched the Tronville wood from the enemy, and half of the 19th Infantry Division debouched from Mars-La-Tour and attacked the enemy in position on the plateau to the southward of Bruville. This last named attack fell upon the line of battle of the 4th French Corps, and from the overwhelming strength of the enemy, and his being still further favored by the terrain, the result could not be other than a total failure. In a short time this brigade was driven back with heavy loss and was in great danger of being totally destroyed by the pursuing enemy. Then the 1st Regiment of Dragoon Guards threw themselves upon the pursuing enemy. The enemy's infantry collected about its eagles, drew off from our infantry and was repeatedly broken through and overridden; our depleted infantry was able to reform, our much endangered guns were saved and put in position along the chausseé, and the pursuers withdrew to their former position upon the plateau. By this attack the 1st Dragoon Guards saved the 38th Infantry Brigade exactly as the brigade of BREDOW had previously saved the 6th Infantry Division. I should only repeat myself if, I were to add any remarks. The losses were heavy, but in comparison with the results quite small. The half cavalry regiment was sacrificed (250 horses, in order to save a brigade). Colonel V. AUERSWALD, who had been mortally wounded, collected and formed the remains of his regiment and gave a "hoch" for the king and dropped from his horse, dead That reminds us of the heroism related by the Greeks and Romans of their best men.

Meanwhile the great cavalry struggle developed itself northwest of Mars La Tour. Twenty-one squadrons of Prussian cavalry were here contending against the regiments of Generals MONTAIGU, LEGRAND and

DE FRANC. The cavalry was properly applied on both sides and rode into action with resolution. Echelon after echelon entered the contest and caused a hither and thither waving of the battle. After the most violent struggle with sabre and lance the French cavalry mass was driven back and sought shelter under the protection of the five regiments, twenty squadrons strong, of General CLERAMBAULT, but made no further offensive movements. The Prussian cavalry formed up on the contested plateau and then withdrew to the infantry line of battle which had been reformed at Tronville, and was now prepared to offer further resistance. At this point night and darkness fell upon the field.

Critics have spoken disapprovingly of this cavalry action and have designated it as a useless cavalry duel. But if both sides are in the habit of using their cavalry on such fields as are suitable to its nature and on which the configuration of the terrain admits of its employment, then cavalry duels are necessary preludes to the obtaining of the proposed results.

In the foregoing case it must be granted that the cavalry on both sides was opportunely and properly employed. Upon the Prussian right and the French left the terrain did not admit the employment of cavalry masses. Upon the other wing the Prussian infantry had suffered a check. It was quite reasonable that the French cavalry should then advance upon this wing in order to fall upon the flank of the yielding infantry and thus seize the momentary result to secure a complete victory. It was equally reasonable that the Prussians upon their part should employ all their disposable cavalry upon this wing, in order to protect the threatened flank. Thus developed a cavalry duel. It was far from resultless. The Prussian cavalry gained the advantage. Owing to the fine quality and numbers of the enemy's cavalry he suffered a striking defeat, but he was finally pushed back and the Prussians remained in possession of the battle field. The result was that they accomplished all that they had undertaken to do. Their own infantry was again in condition to re-enter the action. "The fight was again restored" when night came on without the enemy's venturing to make a further advance. If any reproach is allowable to this cavalry, it belongs to the five regiments of General CLERAMBAULT, which took no part in the attack. *It could have reversed the fortunes of the day and have turned the Prussian victory into defeat.*

When one of our great military authorities announces (vide Militar-Wochenblatt, 1881), that the services of our cavalry divisions would have been greater at Vionville if they had been held in hand as divisions, he certainly makes no reproach against the cavalry. From the General Staff history it appears that the divisions could not be held in hand as units on the field because it was necessary to distribute them along the very long and attenuated line of battle, in support of the struggling infantry, which was greatly outnumbered. It so happened that to the left

of Mars La Tour a collective cavalry division could not be assembled (possibly at one time the 5th with thirty-six squadrons might have been collected), but in that part of the field all the cavalry that was accidentally in that vicinity had to be collected in haste by squadrons, regiments and brigades.

Upon the other wing of the Prussian line the battle was also ended by a great cavalry attack. After the attack of the Brigade Bredow the action was carried on for a long time by the artillery, until the Prussian infantry was encouraged to attempt a new attack by the arrival of reinforcements which the 8th and 9th Corps put in on the right wing. There were various isolated thrusts undertaken and successfully executed on the extreme right. The coming up of powerful reserves of the enemy always forced them back into their old positions. After this devastating but honorable struggle had lasted for a long while, towards evening Prince FREDERICK CHARLES ordered a general advance of the whole line of battle of the 3d Corps d'armee and put all three arms in motion. The 6th Cavalry Division gave the final and decisive blow. It was reënforced by the Division Cavalry and formed with twenty-one squadrons. It was already growing dark as they rode to the attack. The Brigade Grüter fell upon an insurmountable position in which the enemy's infantry had ensconced themselves, and had to withdraw. The Brigade Schmidt rode through the skirmish line, scattered a few groups and finally returned again to our infantry, which, notwithstanding its numerical weakness, had accomplished the very glorious result of holding possession of the heights to the south of Rezonville, for the possession of which the contending forces had fought the whole day.

Many find fault with this attack of the 6th Cavalry Division, and declare that it was without result and condemn its having been permitted. As a general rule night attacks should not be undertaken without special reasons. The well-known cavalry "coup" of BLUCHER'S at Gross-Gorschen failed by coming upon a wide canal, which they had not seen in the darkness, and the confusion extended to the corps of MARMONT, but it is questionable whether the French would have continued the pursuit any earlier on the next day, even if this night attack had not been made, for they have never been inclined to very early starts. But the great night attack of the cavalry at Laon decided the battle. If one knows the ground exactly a night attack of cavalry is less objectionable to-day than it was formerly, because the darkness prevents the enemy from deriving the full benefit of the long range of modern fire-arms.

So far as the result of this cavalry attack at Vionville is concerned, it was quite important. It is true that but little infantry was overridden and broken up, but this night attack of all three arms seems to have had a very imposing effect upon the enemy, and his infantry would not face a

second attack. The enemy withdrew to Rezonville and abandoned the battle-field along the entire front of the 3d Corps, *i. e.*, the plateau to the south of the chaussee, Vionville, Rezonville, for which they had fought the entire day.

The enemy's commander could not explain such boldness except upon the theory that the Prussian troops had received important reënforcements, and he determined to withdraw under cover of the night. The undecided battle thus became a victory, and for this victory the army is indebted as much to the boldness and audacity of its cavalry as to the heroic endurance of the infantry and artillery. The infantry had fought all day against an odds of one to four, or one to three, and in their heroic but murderous attacks they had lost nearly all their leaders; they were broken up into small groups, and notwithstanding the reënforcements which came up in the evening they were still not half as strong as the enemy, and the latter still had at his disposal, that had not yet fired a shot, more troops than the whole of the shattered and weary Prussian 3d Corps numbered. The extent of the result of the battle was scarcely a victory for the Prussians. They had maintained possession of Vionville in their center, which they had taken at the opening of the action, and had won one mile of territory on the right wing, but they had lost an equal amount on the left. There had been a change of front pivoted upon Vionville so that the Prussian line, which at the beginning faced northeast, at the close faced to the north.

If BAZAINE had made a determined and heavy attack at daybreak on the morning of the 17th with the heavy reserves which he still held intact, the result of an attack by these intact reserves upon the numerically weaker and exhausted Prussian army can scarcely be doubted.

That he did not do so is due perhaps as much to the boldness and resolution of the Prussian cavalry as to the bravery with which the other arms continued the offensive over a wide front with a light line, so that he was deluded into believing that the entire German army was united on his front.

Think what the result would have been if BAZAINE had made this thrust with his reserves and had attacked the Prussian troops which had been engaged on the 16th at daybreak (4 A. M.) of the 17th, and had thrown them into the defiles upon the line Gorze Thiaucourt. It must be conceded that the shutting up of BAZAINE in Metz and the capture of his entire army later on would hardly have been possible.

What can be said of the losses suffered by the cavalry on this day, which were quite severe, in comparison with the part they took in bringing about such a result? The collective cavalry regiments which shared

in the last night's attack of the right wing lost in the course of the whole day 360 horses. Accepting that this whole loss occurred in the night attack, it must be granted that this loss is not worthy of mention, in view of the great results obtained.

Who can speak of it as a useless sacrifice? * * *

PROTECTION TO THE INFANTRY.

FOURTH LETTER.

YOU reproach me with having been partial in my last letter and with having written a panegyric upon the cavalry. I have no interest to serve in taking up the cudgels for the cavalry. I only earnestly endeavor to give expression to the truth, or better said, to the feeling with which I became possessed for our cavalry during our last campaign. In reflecting upon the further course of the events of the war, I cannot help bringing forward additional proofs in support of the assertion which I made in my first letter, that the cavalry had had just as great a share in the collective results of the war as had the other arms.

On the 17th of August the Uhlan Brigade of the Guard Cavalry marched to St. Mihiel on the Meuse, and reconnoitred, or scouted, the country to the west of that place. All the German corps were enabled with great security to change their line of march from the west to the north and hasten to the assistance of the corps which had fought the battle of the 16th, since this cavalry had been pushed so far to the west that a threatening advance of the enemy from that direction would be known by our troops at least two days before he would be able to make an attack. In like manner the cavalry division of the 12th Corps* was pushed forward to the northwest and secured the army against Verdun and established the fact that only a small detachment of the French army, with the Emperor, had yet disappeared in the west, and that the French army was still encamped about Metz. The Saxon cavalry scouted the country as far as Etain and Verdun. The work of the cavalry just mentioned enabled the great headquarters to make in entire security definite dispositions of the whole fighting force, in order to unite it for a decisive action against the main force of the enemy and to cut off his retreat.

*The 12th Saxon Corp d'armée has a division of cavalry as one of its merits of organization.

On the 18th of August the gigantic struggle between the two armies took place. On this day the cavalry divisions, as such, did not make themselves very prominent in reconnoitering the enemy. Before the opening of the battle the two armies stood facing one another at such short distance that on the right wing it was not possible to employ great masses of cavalry in front Therefore the cavalry divisions which were still with the army were placed in rear of the line of battle as reserves. Upon the left flank the Saxon Cavalry Division reconnoitered in the direction of Etain and Verdun and covered the rear of the army. Although the part taken by the cavalry division in this battle was less brilliant than on other occasions, yet it was none the less active and faithful in the performance of its duty. I can distinctly remember that the advancing hussars of Count GROBEN sent word to the Guard Corps, as it was forming at Doncourt, that an advance guard of the enemy, consisting of all arms and of about the strength of a brigade, was marching upon Ste. Marie aux Chenes from St. Privat-la-Montagne. This report established the incorrectness of the original supposition, that the enemy's right wing only extended to Amanvilliers and enabled the commander of the Guard Corps to set things right by sending his infantry by the shortest road over Habouville to St. Ail, in order to take possession of Ste. Marie.

Under the protection of these hussars and in the secure and well founded confidence that they would receive timely notice of any movements made by the enemy in their front, the Guard Corps moved up in close formation, which troops, as a rule, do not venture to do in close proximity to an enemy. It is true that, through habit, an advance guard of four battalions and a battery was formed, but the body of the corps followed so closely that the whole corps came up in one great column, having a front of three battalions formed in line of battalion masses, doubled on the centre, well closed up and the artillery in columns by batteries in the intervals. This imposing mass moved across the country along the ridge until it came into the danger zone of the enemy's shells, when it was found necessary to assume the fighting formation.

Equally clear in my memory is the moment when I had placed the artillery of the 1st Guard Division and the Corps Artillery on its left, the right resting on the Bois de la Cusse and the left on the village of St. Ail, for the purpose of opening the battle, and far in front of the infantry. The right wing was secured by troops of the 9th Corps, which occupied Bois de la Cusse; in front of my position the Hessian cavalry had reconnoitred the ground up to the enemy's position on the heights Amonvilles —St. Privat; and now unmasked my front by withdrawing through the intervals between my guns, but upon my left there did not seem to be any protection at hand. The enemy's skirmishers were pushing forward from Ste. Marie against St. Ail and gave me much anxiety for the left of my

artillery line. I hastened thither and to my great relief I saw the entire Guard Hussar Regiment halted in a depression of the ground and covering my left flank. I could remain comfortably in my position until the head of the infantry (Guard Fusileers) took possession of St. Ail and by driving back the enemy's skirmishers (and later through storming of Ste. Marie), dissipated all care concerning my left wing. The Division Cavalry did the reconnoitering in the limited space on our front, while the great masses of cavalry, the cavalry divisions, undertook the scouting and reconnoitering at greater distances in our rear. The Division Cavalry also shared readily and effectually in the battle through its movements in covering our flanks.

The 18th of August produced no attacks by masses of cavalry as did the 16th. Upon the right of the battle-field, the ravine between Gravelotte and Point du Jour which was covered by the enemy's fire, prevented our troops from coming promptly into position in their normal formation, and they were forced to break and reform on the other bank under a murderous fire from the French. Therefore, the attempt of the First Cavalry Division, strengthened by two hussar regiments, to advance on that part of the field was a complete failure. Upon the left flank the work in hand was the storming of St. Privat and Amanvillers, and in such actions the cavalry is excluded from taking part. There remained nothing more for the cavalry to do but to hold itself in rear ready for any opportunity that the fluctuations of the battle might momentarily present for its special action.

Critics have missed the cavalry pursuit after the battle of St. Privat. Upon our right wing from the Point du Jour to Amanvillier all possibility of a pursuit was prevented by the enemy maintaining his main position. Our infantry succeeded in penetrating into Amonvilliers just as night came upon us, and after the taking of St. Privat there was nothing to pursue. Such of the enemy's infantry as had not withdrawn behind the protecting woods in rear before the storming of the place was destroyed in St. Privat: some of them killed and the balance captured. During the night the French army took up its position under the protection of their fortress walls, and pursuit by cavalry was impossible.

The battle had lasted until darkness with great violence and it was necessary to establish how the enemy stood at daybreak on the morning of the 19th. We see several cavalry squadrons trotting forward before the break of day and the complete evacuation of the position by the enemy was soon confirmed. That portion of the Saxon Cavalry Division which was still held at Auboué (while the main body was reconnoitering and scouting towards the Meuse) *i. e.*, one brigade hastened to Moizieres in the Moselle valley and completed the blockade of the enemy close under the cannon of the fortress.

Let us cast a glance upon the activity of our cavalry between the battle of St. Privat and the catastrophe of Sedan.

After the somewhat disorganized condition of some of the troops, which had been caused by the loss of so many of their leaders of the higher grades, had been overcome, the army of the Meuse was withdrawn from the district of the Second Army and brought in line with the Third Army. After this was done, a day's rest was given to these sorely tried troops, and on the 23d of August these two armies began their forward movement towards Paris, and expected to meet the enemy in the vicinity of Chalons, where McMahon, in the presence of the Emperor, was assembling a new army.

The base from which this march was begun was with the Third Army (which was still a little further to the front than the Army of the Meuse) the line Ménil la Horgne Treveray Hundelaincourt-Gondrecourt and in an air line about seventy miles from Chalons. The cavalry pushed rapidly forward, and on the evening of the 24th our cavalry patrols had already discovered that the camp at Chalone had been quitted. These cavalry detachments must have ridden between ninety and one hundred miles in the two days, for they had to go hither and thither, and the roads are much longer than an air line. On the 25th the reports of this cavalry came in to confirm the supposition, grounded upon intelligence received from other sources, that McMahon's army had moved northward in order to turn our right flank and extend a hand to Marshal Bazaine, who was shut up in Metz. (While pushing these cavalry divisions to the front, they accomplished all that could be expected of great raids. They captured whole battalions of Mobile Guards in process of formation that had been armed, but were not yet uniformed. I saw one such battalion brought in on the evening of the 25th of August.) The reports referred to, reached the great headquarters on the nights of the 25th and 26th of August, and during the 26th of August we were stopped in our march towards the west and immediately turned towards the north.

In two cavalry divisions of the Army of the Meuse, the *Guard and Saxon Divisions, which, up to this time had been held well in hand, now undertook the reconnoitering and scouting on the new front. Unusual forced marches were demanded of both these divisions. The cavalry of the guard made a right turn upon our front and reached Richicourt, and the Saxon cavalry reached Dun on the Meuse, with its leading brigade on the same day, and established the fact that the enemy had not yet reached the main road leading from Reims to Metz.

While the 12th and Guard Corps were being pushed forward to the north by long marches, in order to obstruct the enemy's movement

*A division of cavalry is part of the Guard Corps organization.

towards Metz, the cavalry divisions pushed further forward in order to locate the enemy with certainty.

On the 27th of August, some of our daring cavalry officers turned the French camp and established that they were located at and about Vouziers. One of these officers (Lieut. V. ZIEGLER, of the 3d Regiment of Ulans of the Guard,) must have ridden about ninety miles on that day. The cavalry of the 12th corps advanced to Stenay and pushed patrols as far as Beaumont. There they found the enemy's cavalry.

On the 27th of August, the first meeting with the enemy's cavalry took place at Buzancy, in which the Saxons overthrew the enemy. On the 29th of August, our Ulans of the Guard captured a general staff officer of the enemy and an officer of the Intendance who was innocently and carelessly traveling from one corps to another in a carriage. The officers of the enemy were no longer safe against the bold attacks of our cavalry in the very midst of their own corps. This catch was one of great importance for us, for upon the general staff officer was found the order of march for the enemy's army for the following day. This confirmed the correctness of the conjectures of our commander over the movements of the enemy.

The first fruit of this was the victory of Beaumont, where the careless enemy was surprised in the clear light of day and two corps d'armeé almost entirely dispersed. It would be necessary for one to be present and see, as I did on the day before the battle of Beaumont, the manner in which our cavalry surrounded the moving column of the enemy, as bees disturbed in their hive, in order to appreciate their work. I saw a corps d'armeé, of which I estimated the number of battalions at about forty, constantly annoyed and delayed in its march by our troublesome Ulans. Occasionally whole companies would quit the column and deliver a volley upon a single patrol, which would immediately disappear in order to avoid loss. Unspeakable fatigue was the result of this kind of thing. They reached their destination extremely tired, and at nightfall and from weariness neglected taking the usual precautions for the protection of their inhospitable bivouacks; while our infantry, quite near them, but of which they were entirely ignorant, slept comfortably in the villages.

The pursuit of the two divisions of cavalry last mentioned on the day after the battle of Beaumont, did not produce any direct result in the way of capturing prisoners, etc., but had an indirect result in relation to the general situation; in operating on the right in such a way as to bar the route of the enemy as far as the Belgian border. The cavalry of the guard prevented a provision train moving from Carignon by breaking up some of the wagons with their artillery. This train furnished rations for the Guard Corps for eight days.

By the close of the 31st of August, these cavalry divisions had completed their work as reconnoitering and scouting cavalry against the army of Marshal MCMAHON. The infantry of the two armies had entered the fighting zone. The net which the cavalry had heretofore thrown around the enemy was now strengthened by the other arms, and the time had come for these to reap the harvest which the cavalry had prepared.

In the battle of Sedan our cavalry did not take any conspicuous part. The annoying feeling of inactivity while the battle raged, drove some of the cavalry to take part in the struggle.

Yes, we see isolated attacks of small masses of cavalry, resulting from such restlessness, which probably had just as well been dispensed with entirely. There was no pursuit after the battle. But that was as it should have been. While the fire-arms are doing the rough work, the cavalry belongs in the reserve in rear, covering the flanks and rear by observation. In this case there was nothing to pursue, for the whole army capitulated.

The cavalry attached to the infantry divisions were constantly attacking by squadrons, reconnoitering and patrolling during the course of the battle, and if I were willing to run the risk of tiring my readers, I could relate many instances where, while the opposing lines of artillery were engaged, the cavalry moved about between the two lines of fire in order to bring information concerning the enemy and the terrain. In like manner the division cavalry took part in all the later actions at which I assisted. With great audacity the cavalry patrols would ride up to the villages which were to be attacked, and ascertain whether they were held by the enemy or not, and if so, in what force and manner. The services which the division cavalry rendered, was so important that during the long position-war about Paris, every company, when assigned to the execution of some duty, would beg for a few mounted men as messengers and patrols.

After the battle of Sedan, I received the order on the 5th of September, to make an attempt to bring about the surrender of the fortress of Montmedy by a bombardment with field artillery. I appeared before the fortress before daybreak, and the cavalry had already encircled and reconnoitered the place so carefully upon the previous evening, that I was enabled to make my dispositions at once. The collective information of the cavalry was subsequently established to be absolutely correct. A glance at the march of the troops from the battle field of Sedan to Paris demonstrates sufficiently, how, during this forward movement of our army, the cavalry divisions reconnoitered several days march in front.

The cavalry divisions arrived in front of Paris two days march ahead of the infantry (for example, before Gonesse and Etains on the 17th of

September), then crossed the Seine and undertook alone the blockading of the west side, covering themselves against the fortress and the west side until the blockade was completed by the arrival of the infantry two days later. On this occasion things were executed by our cavalry which are now considered as quite natural and have never been presented as being worthy of special mention. But the history published by the General Staff has given due credit for these actions. Our cavalry crossed rivers where the bridges had been destroyed, rode into cities, villages, and forests, in which the inhabitants and franc-tireurs offered resistance. They suffered frequent losses in such attacks and occasionally entire patrols were captured, but upon the other side we see weak cavalry detachments scattering whole companies of the enemy's national guards and carrying off their officers as prisoners. We see that where the infantry is disheartened or, as militia, has not yet gained the requisite confidence and cohesion, the old superiority of the cavalry again makes its appearance.

So soon as the blockading of Paris was completed, the cavalry undertook immediately, and almost alone, the covering of the rear. But one infantry corps was detached and that was sent to Orleans, and the cavalry, which was operating far to the rear of the besieging army, could get no additional support until our infantry could be reënforced from home by sufficient numbers to bring the combatant strength up to the normal, which, in some of our corps, had melted down to one-third by the time they arrived before Paris.

The cavalry advanced to Compeigne and Beauvais in the north: Etrepagny and Les Andelys on the northwest; Dreux and Evreux on the west, about forty miles, and their patrols were pushed to the gates of Rouen Chartres, until they met such resistance that it could not be overcome without the assistance of the infantry. The cavalry attached to the command which had been sent to Orleans was pushed out to Sabris, about forty miles further south, and reconnoitered in the direction of Blois and Vendome. In view of such actions, one must read with great astonishment the assertion made in a late publication, that the great masses of cavalry which we had before Paris were inactive and useless. In fact we did not have one cavalryman too many, but could have made use of more if we had had them.

There are writers, and some of them cavalrymen, too, who have expressed the regret that at this period more extended raids were not made — raids reaching the very heart of the enemy. But to have done so would have required more cavalry than we had, or had we detached great cavalry corps for this purpose, we would not have had sufficient remaining to perform the security service and cover the rear of the besieging army. It must not be overlooked that we were in a civilized

country, thickly populated by bitter enemies, a country traversed by numerous railways, and that such raids reached their limit much sooner than in the extensive country of America, where a partial sympathy could be counted upon in a percentage of the inhabitants.

I might extend the itemized list of services performed by our cavalry, and I have only mentioned those actions in which I was brought in contact either directly, or indirectly, in the execution of my own work. I am convinced that upon all the other theatres of this eventful war the services of this arm have been equally important, and that any impartial witness who had been in the position, as I was, to see from the standpoint of a corps commander the duty performed by our cavalry, would have a similar opinion of the worth of this arm.

If single instances are mentioned to me in which a cavalry troop could have accomplished more, or in which a leader had not accomplished all that had been expected of him because he had not taken the right measures, this does not alter the opinion upon the cavalry as a whole. Everywhere, where anything is done, more or less faults occur. The bravest and most excellent warriors have committed faults; even NAPOLEON and our great king. The latter accuses himself frequently in his writing. It is neither my purpose nor design to expose such faults and to thus judge men, who, at another time, perhaps the same day, performed distinguished services

DISCUSSION ON "LETTERS ON CAVALRY."

GENERAL MERRITT:— Before proceeding to the discussion of this first paper, I will read a note received from Colonel HUGHES, Inspector General's Department, who translated these papers, which shows so commendable a spirit that I would not have it lost to members of this Association. The note should be printed that it may be read by non-resident members of the Association, and generally by officers of the Army:

INSPECTOR GENERAL'S OFFICE,
WASHINGTON, D. C., October 17, 1888.

MY DEAR GENERAL:— I transmit herewith the first installment of letters on cavalry, translated from the German of Prince HOHENLOHE INGELFINGEN. The value of these letters would seem to lie in the hints or "*directions*" they contain. The discussion of these hints by the officers of your Association would certainly be both interesting and instructive. My original work on these letters was done on railways, at meetings, and at odd times, and is quite crude, but I cannot find the time to rewrite the letters. As the translation was made simply through good-will for the cavalry and with the hope of contributing thereby to the success of your Association, I trust that German idioms and crudities may be treated with leniency.

Very sincerely yours,
R. P. HUGHES.

General Wesley Merritt, Commdg Dept. of Mo., Fort Leavenworth.

It will be recalled that able suggestions for the improvement of the cavalry made by Colonel HUGHES in inspection notes were discussed here early in the organization of the Association, and I have personal knowledge of suggestions made by the same officer for the improvement of the infantry drill tactics, tried while I was in command as superintendent at West Point.

Colonel HUGHES deserves the thanks of this Association and he and other officers of the army, who like him are devoting the time and talents which can be spared from the duties of their several stations, to the improvement and advancement of the three arms of the service, deserve the gratitude of the army and of the Government. It should be added that the note from Colonel HUGHES was written to me personally, with no thought of its publication.

It will appear from Prince HOHENLOHE's remarks in his first letter that our own is not the only service in which jealousies exist between the different arms. In fact, as compared with other services, I am inclined to the belief that such feelings in our service are confined to the limit which is useful in exciting a reasonable rivalry in the three arms, which results in improving each. I have never heard that anyone in the cavalry, artillery or infantry of this country has advocated the abolishment of any one of the other arms, as not being necessary to the army, or as being too expensive. It is true that during the early part of the Civil War complaint was made of the cavalry, and later, hints were heard that the artillery was not as effective as it might be; nor can our brethren of the infantry boast that they were entirely without criticism from others. But in the sequel all will agree, that if there was any result to *these strictures it was for the good of the arm complained of, and in* the end each was respected by the others. And I wish right here to correct an impression which is calculated to become permanent by iteration. It is an injustice to the cavalry, and its correction does no wrong to any man. We have heard it often, and it again occurs *in the admirable paper on* the late distinguished General of the Army, which was recently read before the Cavalry Association. While that is a just and well deserved eulogy of a great leader in war, and is not in any way open to criticism, there is nothing improper in having it serve as a basis for the correction I contemplate — that is the refutation of the fling against the cavalry in the remark attributed to General HOOKER, "Who ever saw a dead cavalryman?"

In the first place General HOOKER never made the remark. On the other hand, he and other general officers of experience in the line, recognized how much the cavalry of the Army of the Potomac, under MCCLELLAN, had been misused and neglected, and he at once, on coming in command of the Army of the Potomac, took measures to reorganize and strengthen the cavalry: and I think every cavalry officer of the army, who is conversant with the facts, will agree with me in saying that to General HOOKER, more than to any other one man, the cavalry of the Army of the Potomac owes its opportunities for reorganization, which made it fit for the victories it afterwards gained.

In the second place, the innendo conveyed by the question has no foundation. General MCCLELLAN had no conception of the management of cavalry. Nothing was further from his comprehension than the aggressive and independent tactics of this arm. The cavalry was to him a body from which to draw orderlies, guides, couriers and pickets (named in the order of their importance), and nothing more. The result was that the cavalry under MCCLELLAN was distributed by regiment, squadron, troop and detachment among the Headquarters of the Army, corps, division and brigades, and thus stultified for its legitimate uses. On the other hand, in the Confederate army the cavalry was powerful in numbers and well organized from the first. *It is not wonderful under these contrasted conditions* that more failures than successes make up our cavalry record of the first two years of the war.

After its organization by HOOKER the cavalry never lowered its standard to any foe, nor took second place with friends. Commencing at Beverly Ford (though then not handled to the best advantage), it has nothing but victories to inscribe on its record. Beverly Ford, Aldie, Gettysburg and the nine days fighting thereafter in Maryland and Pennsylvania, all *attest the success of the cavalry in 1863 until the end of the campaign, when SHERIDAN came,* finding the cavalry ready to answer his call in any emergency. He made no changes in its organization, found none necessary in its preparation for campaign. It was then complete in every part and specially fitted for the work of a master mind. How could it be otherwise when such accomplished cavalry leaders as PHILIP ST. GEO. COOKE, BUFORD, STONEMAN and PLEASANTON had created and perfected it, and the experience of two years hard service, relieved it is true, by scarcely a single success, had inured it to the hardships of war?

Even under SHERIDAN it had nearly met the fate of another disintegration under the immediate army commander when GRANT intervened and saved it from this new peril.

This, in brief, is a glance at the history of the cavalry of the Army of the Potomac.

No need to dwell on its after record. But let us have done with the flash phrases, such as the one referred to, which convey so much and have so little foundation in fact.

CAPTAIN RAFFERTY: — The letters on cavalry which the translations of Colonel HUGHES have afforded us an opportunity of reading, are full of interest to this Association. Written by a prominent actor in the events described and by one evidently anxious to improve the cavalry service of his country, the letters inculcate much that is indispensable to the well being of the cavalry of every nation.

Prince HOHENLOHE shows how undesirable it is that there should be any quarrel between the cavalry and the infantry: each having its proper duties which do not clash, and each at times dependent upon the support of the other. Together, knowing what each can do, they should act in concert. His remarks on this subject are much to be commended.

When we consider the infinity of work and subjects that a cavalry officer should devote his time and attention to, all properly bearing upon his profession, it is not to be wondered at that Prince HOHENLOHE, familiar with all branches of the service in peace and war, should state that a greater sacrifice of time and health is demanded of the cavalry officer than that of any other arm.

A mere study of the cavalry tactics and army regulations will be of little avail in the application of cavalry to the various purposes it may be put, and yet for a period after the war of the Rebellion, such were about the only professional books a cavalry officer on our remote frontier had access to. At that time, when foreign books were almost unobtainable, and our own officers of reputation and experience had written but little for publication, the Ordnance Department, I believe, did much good by publishing its notes, exciting an interest in professional matters and letting us know what was being done and written about in our own and foreign armies.

Prince HOHENLOHE describes what was accomplished during the Franco-German war by a cavalry properly organized, well drilled and carefully instructed, and practiced in all the duties required of modern cavalry. Colonel BONIE, in his pathetic narrative, describes the reverses, the lack of instruction in scouting and other duties of the French cavalry in the same war. The letters and narrative are the complements of each other, and together force us to the conclusion that in time of peace more is required of the cavalry to render it fit for war than is needed by the other arms. Mere theoretical instruction will not answer. An opportunity must be found of occasionally bringing together, for practice, as large bodies of cavalry as can conveniently be assembled.

Within a year or two a start has been made in this direction, although attended with many difficulties. The government should encourage such camps of instruction, and not hamper all efforts toward that end by not allowing anything extra for the transportation of troops, the purchase of forage, the rent of grounds, etc. It is only in such large assemblies of troops that many of the duties required of cavalry in modern war can be practiced. We may know by study what the books say in reference to the handling and management and attack of larger masses of cavalry, but that is not enough. The actual practice is much to be desired. HUME states that in time of war we must be satisfied if our army accomplishes what it has been taught in time of peace. Here again we are shown the great necessity of thorough instruction of the cavalry in all of its duties.

FIRST LIEUT. BLOCKSON: — I think these letters are admirable in tone and fuller of instruction to the cavalryman of our army than any translations yet read before the Association. Without going into the sometimes dry statistics of foreign organization, they are comprehensive and expressive concerning the requirements and the place of modern cavalry, the relation of the three arms of the service to each other, and the feeling that should exist between them. The description of some of the principal operations of the Franco Prussian war illustrated the fact that a preponderance of cavalry, if properly managed, may be made to win "victory before the day of battle," and that its role on the battle-field itself is but little inferior to that in former wars. The idea that the ratio of cavalry to the rest of the army during war should be regulated in a great measure by the resources of the country, is in accord with the opinion of many writers, that future campaigns will begin with a series of great cavalry battles.

The author, like other foreigners, does not do justice to the operations of our cavalry in the war of the Rebellion, claiming for the German cavalry the first application of principles which were practiced by our own.

CAPT. BABCOCK: — *Mr. President:* These letters contain a clear statement of the brilliant results obtained by the modern use of cavalry, on the part of the Prussians. This in a great war waged between two of the most formidable nations of the earth. The record here given may well make all cavalry soldiers proud of the part before them in the future, that of the irrepressible ubiquitous horsemen, ever in touch with the enemy. We may also feel a just pride in the gallant charges, death rides, undertaken with such blind devotion, notwithstanding our deep regret that so many brave riders should have fallen, especially on the French side, in the effort to carry out impossible orders. The letters before us present a vivid picture of the long columns of invading infantry, pressing forward in three great masses, steadily, surely, each [illegible] in every direction with its antennæ of restless horsemen, whose light

est touch of the enemy is instantly communicated to the center. We see changes of direction and intention of great armies, vital decisions and resolutions of army commanders, based upon the clear and reliable reports flashed along the cavalry feelers to the guiding brain of the masses. How it was done is well worthy of the critical study of cavalry soldiers. We find that the experiences of the war of 1866 were of great value to the Germans. We are told by our author that at the close of that war, the Prussians understood that the name reserve, applied to artillery or cavalry, was misleading.

The artillery was hereafter to be used well to the front and early in the action, that every advantage might be taken at once of its power to shake the infantry lines destined to receive the attack. So the heavy masses of cavalry formerly "kept in reserve to act as a sort of torpedo," on the infantry battle field, are hereafter to be spread out fan-like in advance of the *infantry columns, an elastic, but impenetrable shield. With the Germans the discovery of a* defect in their military organization is the signal to make diligent search for the remedy. We find them, therefore, four years after the time when great armies approached each other within five or six miles without discovery, as at Königgrätz, ready to flood the French territory with horsemen trained in the special duties of scouting and reconnaissance, and we have before us in these graphic letters, the record of their achievements. We also have within our reach, much that has been written by the German cavalry leaders themselves, on the subject of the new duties of their mounted forces: duties which, in the words of the author before us, "though less brilliant than the battle charges, are not the less important," and we may by a little careful study, unravel the net work, formed by groups of ever moving horsemen, which appeared to the harrassed French soldiers, and frightened villagers, so mysterious and entangling. I commend the study of the German cavalry in '70 and '71 to all progressive cavalrymen.

But my object just now, is to point out that the great results accomplished by the invading horsemen were obtained under conditions not likely to be repeated in future wars, and for that reason a study of the operations of our own great cavalry leaders has more vital interest for us.

The proof is plain. On this side we find the enterprises of the blue or gray riders, met by equal skill and audacity on the part of their opponents; whereas, admitting the great gallantry of the French cavalry, their want of training in the methods of their adversaries put them out of the problem, and the operations of the German horsemen in reconnaissance were practically uninterrupted.

This assertion rests upon the authority of the French cavalry officers themselves. Our author says, "Every one should sweep in front of his own door," and I invite your attention to a collection of errors and fatal blunders, made by the opponents of the German cavalry, which a distinguished French colonel of that arm has swept together, so that they may be plainly seen by his countrymen and avoided in the future. "It was thought in France," he says," that both the regulations and system of tactics for cavalry, approved in 1875, were perfect for 1870. In the midst of this indifference war suddenly broke out, and we were obliged to appear on the field of battle with all our old ideas and our old mistakes." "Our enemy carrying on his preparations with secrecy" (for the new use of cavalry) "burst upon us with the greater force and overwhelmed us."

He gives a pitiable picture of strong cavalry forces in retreat, after the first battles, moving in column on the roads, annoyed and harrassed by advanced scouts of the enemy, which he says, were taken for the heads of strong columns.

Before these "fly-away" scouts the weary division of French cavalry pressed forward in retreat ceaselessly, wearing out horses and men; continually changing their route to avoid the heads of phantom cavalry columns, which appeared in every direction; short of rations, their trains could not follow their windings; soaked by the ceaseless rain, with little rest or sleep for many days; they played a part in this long retreat which, in the words of the French author, "was simply nil, as we neither obtained information or fought" but were "left in unwieldy masses, which rendered no service, either by protecting our own army or in any other way."

But worse was in store for them: herded within the lines of the infantry by the blockade of Metz, our French colonel tells us that on the "9th of September the cavalry had to furnish one thousand horses to aid in feeding the troops." "By the 21st the forage has been so cut down that more horses died than the commissariat wanted. Those that remained ate each others manes and tails, dirt or leaves!" Again, in the operations preceding the disaster at Sedan, our French colonel tells us, "The Prussians had pushed forward their cavalry and artillery to oblige us to halt." By this manœuvre they gave the rest of the army time to concentrate for the great battle of the following day. One may well ask what was our cavalry doing all

this time; massed in divisions it marched each with its own infantry corps. Not a man was sent out to gain information of the enemy's strength and intentions."

"Tied to the apron strings," so to speak, of the protecting infantry, this fine cavalry, like their brothers at Metz, were included within the crushing grasp of the encircling Germans; their brilliant charges, made too late, were unable to liberate them. Our French author says: "The commands of our conqueror are received; all we have is to be given up. On the receipt of this intelligence we were filled with rage and the men were animated by the same feeling. The troops refused to give up their arms and set to work to break up everything. Pistols, swords, cuirasses, lances, all are dashed to pieces; the saddles are destroyed, the guidons are burnt. * * * Deep in mud, without cloaks and with our clothes worn out we crowd together for warmth." "There were still 10,000 horses belonging to the cavalry. In order to avoid giving them up to the enemy, their picketing ropes had been cut and the horses, galloping in every direction, soon left no place where one was out of their reach; deprived of their usual food they commenced to fight and tore each other to pieces."

Such was the fate of the brilliant French cavalry, which scarcely a month before rode out "so confident in itself and careless of danger." Do we ask how this happened, the French answer is: "If, in place of leaving our cavalry idle, we had employed it in every direction to maintain our contact with the Prussians, the disaster of Sedan would never have occurred." The Marshal, warned in time, would have been able to make good his retreat.

It is evident from all this, I think, that the Prussian horsemen rode at ease and made their observations for the most part undisturbed, and it remains yet to be proved by the contact of equal foes, whether the immense spread of the German cavalry in 1870, radiating in decreasing subdivisions from a common center, can be maintained, to its full extent, in the presence of an equally active cavalry foe. It is more likely that to obtain the information which in '70 was brought in by small groups of horsemen, fearlessly riding over the country at great distances from their regiments, it will be found necessary to hold them somewhat more in hand and push forward on every avenue of approach to the enemy, a self-supporting body of cavalry of considerable size, trained to fight under all conditions. So it is that the careful study of the expeditions of cavalry against cavalry, so fruitful of good results, in 1866, 1 and 5, is of first importance to us as students of cavalry progress.

THE COMMAND OF ARMIES. FROM LA GUERRE MODERNE. BY DERRÉCAGAIX.

BY LIEUT. COLONEL A. K. ARNOLD,
FIRST U. S. CAVALRY.

THE constitution of command is one of the first elements of the strength of armies. It reposes upon a fundamental principle — the *unity of the command* — or, according to a happy expression of the great NAPOLEON, "*the unity of the military thought.*"

This principle constitutes a rule without exception It is absolute. In peace, as well as in war, it is the basis of all good army organizations. But it is especially in a campaign that its neglect can cause irreparable disaster. It has been many times proven that in multiplying the number of chiefs called to make a decision, a means is only offered to each one to elude the responsibility in difficult movements.

It is very rare then, that in the hour of danger the execution of a plan has not suffered from it. This truth is so clear that at first sight it would seem useless to prove it. In practice, however, it is not always so, and in many circumstances the command meets with difficulties which render the application of this principle very nearly impossible. History offers many examples in which its neglect became fatal.

In the spring of the year 1796, when BONAPARTE, scarcely twenty-seven years of age, had already conquered Lombardy, the Directory fearing his prestige, resolved to divide the army of Italy into two parts, and confide one of them to KELLERMAN.

BONAPARTE wrote to the Directory the following letter, which caused it to abandon its project. It contains upon the unity of command all the thought of this great soldier:

"HEADQUARTERS LODI, 25th FLOREAL, YEAR IV.

"I received at this instant the courier who left Paris on the 18th.

* * * * * *

"I believe it to be very impolitic to divide the army of Italy in two parts. It is likewise contrary to the interests of the Republic to place two generals over it. The expedition to Leghorn, Rome and Naples is a very little thing; it should be made by divisions in echelon in a way that one could, by a retrograde march, find oneself in force against the Austrians, and threaten to envelope them at the least movement they might make.

"For this, it is necessary, not only a single general, but even that nothing hinder him in his march. I have made the campaign without consulting any one. I would have done nothing good if it had been necessary to adopt another's views. If you impose upon me all kinds of obstacles, if it is necessary for me to refer all my steps to the commissioners of the government, if they have the power to change my movements, to take away or send me troops, expect no longer any good results.

"If you enfeeble your means by dividing your forces, if you break the *unity of the military thought*, I tell you with sorrow, you will have lost the finest opportunity to impose laws upon Italy.

"In the situation of affairs of the Republic in Italy, it is indispensable that you have a general who has entirely your confidence.

"If I am not the one I will not complain; but I will employ myself in redoubled zeal to merit your esteem in the part you may confide to me. Each has his own way of making war. General KELLERMAN has more experience, and will do it better than I, but to unite us would ruin everything."

This letter was supplemented the same day by another which BONAPARTE addressed to CARNOT, and which is not less explicit:

"I wrote to the Directory relative to the idea of dividing the army. I swear to you that I have only considered in that the good of the country. Besides, you will always find me in the right way. I owe to the Republic the sacrifice of all my ideas. If any one seeks to prejudice you against me, my answer is in my heart and in my conscience. As it may be possible that the letter to the Directory might not be well interpreted, and as you have been friendly to me, I take the liberty of addressing this to you, praying you to make use of it in any way your prudence and attachment to me may suggest. KELLERMAN will command the army as well as I, for no one is more convinced than I am, that victories are due to the courage and audacity of the soldiers; but I believe that uniting KELLERMAN and myself in Italy would ruin everything. I cannot serve voluntarily with a man who believes himself the first general in Europe, and besides, I believe it is better to have one bad general than two good ones.

"War is like government, decided in a great degree by tact."

In 1812, however, NAPOLEON himself, forgetting the principles which he had so clearly enunciated, committed the fault of ordering the northern army of Spain, commanded by BESSIÈRES, to go and sustain that of Portugal, under the orders of MARMONT, without deciding which of the two marshals would command in Chief.

This situation of affairs created grave embarrassments and became an obstacle to the operation.

MARMONT thought it was his duty to protest in [illegible]tter terms to Major General BERTHIER, Chief of Staff to the Emperor:

"His Majesty supposes that in the case of an offensive movement by the English the Northern Army would sustain that of Portugal by two of its divisions, but can the Emperor be persuaded that in the actual order of things troops will arrive promptly and on time?

"The enemy takes the offensive. The one who should fight him prepares his means, the one who acts hypothetically, awaits quietly and allows precious time to be lost. The enemy marches upon me, I unite my troops in a methodical and precise manner. I know to a day, nearly the moment, when the greatest number at least will be in line, at what time the others will be in connection with me, and from this order of things I determine to act or temporize. But these calculations I can only make for troops

simply and purely under my orders. For those that are not, what slowness! What uncertainties! What time lost!

"I announce the march of the enemy and ask for aid. I am answered by observations; my letter came to hand very late, because the communications were difficult in the country. It will be the same with the answer and the answer back, and the enemy will be upon me. The consequence is that I am placed in a false position and I have no means of doing anything methodically and with due knowledge."

This situation was the result of the habit taken for sometime past by the Emperor to command all himself. He considered himself even at Paris as the veritable Chief of the armies in the Peninsula and sent his orders through his Chief of Staff, who also resided in Paris.

This example shows that not only the unity of command should always be maintained, but that it should be also exercised upon the theatre of operations.

One of the most serious obstacles to the unity of command is the *equality of grade*. When it exists beween different chiefs in an army, it is only by the energy of his character that the Commander-in-Chief can enforce obedience. In order to avoid these difficulties, most civilized nations have created special grades for the commanders of corps d'armeé and of armies. The Germans have thus four grades of generals. Major generals for brigades, lieutenant generals for divisions, generals for armies, or, more properly, corps commanders, and field marshals for the armies. Under the Consulate the French had also chiefs of brigade, generals of division, lieutenant generals and generals-in-Chief. The lieutenant generals disappeared with the first empire, and from that time the clashing between the commanders of corps or marshals was only emphasized. The presence of the Emperor was nearly always necessary to cause them to cease.

One of the most striking examples of these dissensions was that which Marshal NEY gave in Portugal, in 1811.

At this epoch when MASSÉNA was forced to abandon the investment of the lines of Torres-Vedras and retire into Spain, his army was in a most critical position. The privations and lack of provisions had much impaired its discipline. However, at the end of March — after a fine retreat, which had given his troops a certain vigor — MASSÉNA resolved to retake the offensive upon the Tagus. He gave immediate orders in consequence. The disapprobation of his lieutenants manifested itself then in a most unfortunate manner, and NEY, who was the only Marshal among them, forgot himself so far as to become the speaking trumpet for the general complaints.

On the 22d of March he wrote to his chief an insubordinate letter, which contained a formal refusal of obedience. MASSÉNA, in spite of his

energetic character, was kind-hearted and a little enfeebled by his long service. He did not reply. NEY wrote a second letter the same day at 6 P M., in which he announced his resolution to set out the next day with his corps d' armeé in another direction from that which had been prescribed to him.

MASSÉNA hesitated no longer; however, through a feeling of friendship for his old companion in arms, he informed him that if he persisted in his disobedience he would be forced to take measures to cause his authority to be respected. NEY had gone too far to recede. He believed besides that MASSÉNA was incapable of taking an energetic decision against him and hoped to associate the troops of the 6th Corps in his disobedience. He persisted in his refusal. MASSÉNA took the command of his corps from him and gave it to the oldest division commander. He forbade the division generals to obey NEY, enjoined them to conform to the instructions emanating directly from the Chief of Staff and rendered them personally responsible for all infractions of his orders and signified to Marshal NEY to go to Spain and await there the will of the Emperor. NEY then wrote to his chief the following insubordinate letter:

"The Emperor having confided to me the command of the 6th Corps, no person other than His Majesty has the right to relieve me from the command of it. I protest then still against this new disposition; however, if the generals of the divisions of the 6th Corps obey you, I will go to Spain."

The generals obeyed. On his side in spite of two new protestations and in spite of the chagrin which he experienced by it, MASSÉNA maintained his decision. NEY left the army and went to Spain. Two years after, NEY himself being in command of three corps d'armeé in Lusania, the chiefs of which were very nearly his rank, he could not make them recognize his authority, and he complained of it to the Major General to whom he wrote the following letter:

"It is my duty to declare to your Serene Highness that it is impossible to do much with the 4th, 7th and 12th Corps d'armeé in the present, state of their organization. These corps are united by order but not in fact. Each of the generals in chief do very nearly what they judge convenient for their own safety. Things are at such a point that it is very difficult to obtain a position. The *morale* of the generals and in general of the officers is singularly shaken. To command thus is only to command half, and I would like better to be a grenadier. I pray you to obtain from the Emperor, either that I be general in chief alone, having under me only division generals of wings or that His Majesty be kind enough to relieve me from *this hell*. I have no need of speaking of my devotion; I am ready to spill all my blood but I desire to do it usefully. In the present state of affairs the presence of the Emperor would alone establish proper relations between the officers, because all wills cede to his genius and the petty vanities disappear before the Majesty of the throne."

Rivalry of command does not result alone from equality of grade but also from sentiments of egotism which exist in all armies, either in the hearts of men or even in certain corps or in certain arms. These sentiments are always culpable. They cause the ruin of troops. They prevent the chiefs from accepting in difficult moments the aid which is offered to them or to hasten by forced marches to the aid of a comrade engaged. In order to avoid such faults it is a duty to maintain in all the corps of officers a sentiment of comradeship and esteem, based upon honor, pride of a noble career, upon the conviction that officers of an army form only one and the same family, the union of which is one of the first conditions of success. Sometimes the principle of the unity of command is violated by the creation of a "second in command." The consequences of this innovation have always been unfortunate.

They have been appreciated very clearly by the Duke of Wellington in two letters which deserve to be cited.

WELLINGTON TO MARSHAL BERESFORD

FREUEDA, DEC. 2, 1812

"I have always been impressed with the uselessness and inconvenience of having a *second* in *command* in an army. It is a pompous and sonorous title without defined functions or responsibility of any kind, and which at the same time makes very annoying pretentions. You know, I believe, that I have once had experience in this matter. Each officer in an army should have a duty clearly defined to do, and be responsible for his acts. Such is the position, as I understand it, of a general commanding a division or corps d'armeé. A second in command has no duty that can be defined, save perhaps, to give advice for the executions of measures of which he will not be in the least responsible and ready to deny when he learns that they would not be looked upon with favor in England. Such an experience as this I have had at least once."

WELLINGTON TO COUNT BATHURST.

FREUEDA, JAN. 26, 1813.

"In my opinion the official title of Second in Command in an army, now that the custom of assembling frequently a council of war has disappeared and that the General in Chief is held strictly responsible for all the events, is not only useless, but prejudicial to the good of the service. A personage without defined duties who has only to give his opinion offhanded, and which he can change at will, would necessarily be an embarrassment in moments when it was necessary to make a decision. Whether a Second in Command is sent me or not, I am perfectly determined to act always after my way of seeing, considering that I will always be regarded as responsible for the results, whoever may be the person who may have advised the measure."

The principle of the *unity* of *the directory of thought* is then absolute, and once its application assured, the force of the command depends upon the personal qualities of the General in Chief, his character and certain

qualities, the union of which, often difficult to find in the same man, is not less for armies, one of the surest guarantees of success.

Often intelligence and capacity are regarded as the foremost qualities of a military chief. This is generally an error. First: There are no foremost qualities. The qualities necessary for a commandant of troops vary according to the circumstances in which he is placed. What is true, is, that with great soldiers the qualities of character surpass all others.

There are two which the Germans appreciate above all others, namely: *decision* and *good sense*. To take a clear resolution without hesitating and putting it practically into execution, is, in fact, with a chief, especially an army chief, an eminent virtue. It is what VERDY DU VERNOIS calls the *clearness* of *conception* and *energy in execution*. These qualities are met with sometimes in ordinary men, when they have acquired by study and reflection the means of discerning clearly the situation.

One of the most remarkable examples of the decision of an army chief was that which Prince FREDERICK CHARLES gave on the 2d of July, 1866, in the evening, when he resolved to attack the Austrian army. At this date the advance guards of the Prussian and Austrian armies established upon the right bank of the Elbe, were less than four and one-half miles from each other, but the former did not suspect that the latter was so near and so concentrated. On the side of the Prussians it was believed that the greatest part of the enemy's army occupied a position beyond the Elbe, the wings of which were supported upon the fortified places of Josephstadt and Königgrætz. The great headquarters had then no alternative than to attack the position or manœuvre in order to oblige its defenders to leave it.

However, the Chief of Staff of the first army, which was most advanced, realized during the day that it was indispensable to have information more complete. For this purpose, he caused small detachments to be sent out on different sides, which were principally directed toward Königgrætz. Patrols of officers well mounted were charged to gather details upon the forces and position of the enemy. One of these penetrated beyond the curtain formed by the outposts of cavalry, and found the height of Dub, near Bistritz, strongly occupied. It learned that the Brigade Brohaska was established there. Prisoners made known that four Austrian corps d'armeé were near by.

An officer of hussars perceived great bivouacks and was able to note the presence of a corps d'armeé at Sadowa.

This important news reached the headquarters of the first army between 6 and 7 o'clock in the evening. It could have tried to transmit it to the great headquarters and await orders, but thanks to the decision of the the General-in-Chief, it was otherwise.

Although the day was advanced, although the great headquarters had already sent its instructions for a general flank march toward Pardabitz, Prince FREDERICK CHARLES took immediately contrary measures. Great masses of the enemy were in his neighborhood. It was necessary then to concentrate his troops immediately in anticipation of what would take place on the morning of the 3d. Consequently, without taking into account the night or bad weather, the Prince dispatched to his different corps at 9 P. M an order to be in position at 2 A. M. near the line of the Bistritz, and ready to attack the Austrian position.

After having caused these orders to be dispatched, his Chief-of-Staff went to Gitschen, where the great headquarters of the King was. He arrived there at 11 P M, gave an account of the situation and of the disposition made, and asked the advice of the King. He hesitated no more than Prince CHARLES, and resolved to attack immediately with all his forces, without preoccupying himself to know if he had before him the entire Austrian army or only some corps.

The victory of Sadowa was due in great part to the energy and promptitude of their decisions. They had for result the taking of the initiative by the first army and causing the arrival at a opportune time of the second army on the right flank of the enemy's forces.

After decision, one of the qualities which contributes the most to success is a *resolute tenacity*. At the close of a day of combat, after a prolonged struggle, when both sides have been exhausted, the general who has the energy to cause the charge to be sounded and hurl upon the foe fresh troops which remain to him is nearly sure of success. This is particularly the advice of Gen. U. S. GRANT who at times has given the most remarkable examples of resolute tenacity. Gen. PERRIN says: "I have heard Gen. GRANT declare that there is a moment in every battle dearly contested, when the two opposing armies are nearly exhausted by their efforts and when it seemed that each could do no more—this was, according to him—the decisive crisis and the general in chief who had sufficient character to take the offensive was sure to conquer."

The resolute tenacity which the German officers displayed—especially in the offensive in 1866 and 1870—was one of the causes of their successes.

In this respect, moreover, there exists in their army traditions, of which they are proud and all try to perpetuate.

Marshal BLUCHER boasted of his *tenacity*, and wrote in 1815:—

"Paris is in my power; the French army retires behind the Loire and the capital is delivered to me. It is to the indomitable bravery and unequalled energy of our troops as well as my own *iron will* that this triumph is due. Lamentations upon the exhaustion of the troops were not wanting in pouring upon me, but I have remained deaf to all. I know by experience

that one should, and can only reap the fruits of victory by pursuing the vanquished without truce or respite."

At more recent epochs the Prussians have been cited as remarkable examples of this quality. That of General FRANSECKI, chief of the 7th division of infantry at the battle of Sadowa merits attention.

Placed at the extreme left of the line of battle of the first army in the Wood of Maslowed, engaged from 8 A. M. this division found itself towards 11 A. M. in presence of the enemy's masses, which unceasingly increased.

The masses belonged to two Austrian corps d'armeé, the 2d and 4th, which had allowed themselves to be drawn in little by little and had finished by bringing into line fifty-one battalions and more than one hundred pieces of artillery.

In order to resist this powerful effort, the 7th Division could count only upon its own troops. Its center at first fell back and it was feared that the two wings would be separated. Soon companies were mixed and divided into groups, which under the leadership of their officers were forced to hold different points of the border; some found themselves threatened in front, on the flanks and in rear. They succeeded however in maintaining themselves in the northern part of the wood.

In the midst of alternate successes and reverses, says the Prussian account, the companies which fought in the thick wood had finished by intermingling completely. Besides, nothing could be seen in front of one; it was impossible then to give to the struggle a single direction and the chiefs were obliged to limit themselves in giving personally the example. Upon all points the officers assembled around them men whom they had at hand, no matter to what regiment they belonged, and brought them to the front. Troops which had been driven back from the woods were sent back again and those which were completely demoralized were gathered and placed in reserve. A great number of Austrian prisoners were sent to the rear and there arrived at the rear a large number of Prussian wounded and troops who had lost their chiefs. Already more than 2,000 men were *hors de combat*. General FRANSECKI had vainly asked for aid, but comprehending the importance of the point he occupied, he—by his example—caused to pass into the souls of all those who were around him the dogged resolution of defending to the last extremity the ground upon which they had spilled so much blood. The resistance continued. Soon happily the approach of the second army was announced and the cry "the Prince Royal arrives" running through the thinned ranks of the defenders of the wood, reanimated the exhausted troops. But this help was still far off. The 7th Division found itself at a most critical moment. It was necessary to send an officer towards the columns of the second army to ask immediate and urgent support. This officer should, to accomplish his

mission, pass at a gallop, through the lines of the enemy's skirmishers. He succeeded in his perilous undertaking, and in a few moments afterwards the Prussian Guard arrived and by a flank attack relieved General FRANSECKI.

The failure of the enemy to drive back the left wing of the first army and break its connection with the second army, was owing to the resolute tenacity of this general.

With certain nations, with the English for example, resolute tenacity has become a national virtue. WELLINGTON was one of those generals who by the firmness of his character, has contributed the most to it. He wrote to Lord CLARENDON in 1811 on this subject:

"No person can better appreciate than you the difficulties which I have had to struggle against, (during the expedition of MASSÉNA in Portugal) but I believe you do not know all. I have persevered in the system I believe best, in spite of the fact, that the opinion of every officer in the English army of Portugal was that I should evacuate the country, and embark for England. Whilst on the other hand the Portuguese civil authorities considered that I should maintain the war upon the frontier, instead of falling back to the lines of Torres-Vedrus, when we lacked for that, not only material strength, but even the means of providing for the needs of the only Portuguese troops which they had been able to set on foot. Nothing less than an unyielding firmness was necessary to me to resist during these nine months of discussions of contrary opinions. Add to this, that public opinion in England varied as the wind, and you will know that I could count only upon myself."

The wars at the commencement of the century offer many examples of this military virtue. Besides, was it not to it that NAPOLEON owed a great part of his success? The triumphs so constant and so complete of NAPOLEON, says ROCQUANCOURT, should be attributed: —

First — To his incomparable ability to *create*, *assemble*, *organize* and *vivify* the means of war, proportioned to the grandeur of his enterprises.

Second — To an activity which procured to him all the initiative of movements.

Third — To a rapidity of *coup d'oeil* and action, which allowed the enemy neither reflection nor time to oppose himself to his designs.

Fourth — To the best *employment* possible of the masses.

Fifth — To that *ascendency* which he exercised from the beginning, as much over his adversaries as over his own troops, and which only increased his greater authority, and his ulterior successes.

Sixth — To a *tenacity* which he knew how to *communicate to all* and which in him was as much an effect of reflection as a gift of nature.

He held it as a principle that, once engaged in action and as long as nothing was decided, he considered it better to continue the combat and consent to new sacrifices rather than render useless to the country, by premature retreat, the blood of men already killed.

This principle, far from being inhuman, has for result the avoidance of new sacrifices.

"Before ceding victory, wait until it is snatched from you," said NAPOLEON, "before retiring, wait until you are forced."

His personal opinion of the qualities of a commander should not be passed in silence:

"The first quality of a general-in-chief is to be cool headed, to estimate things at their just value; he must not be moved by good or bad news. The sensations that he daily receives must be so classed in his mind that each may occupy its appropriate place. Reason and judgment are only the result of the comparison of well-weighed ideas.

"There are men who, from some physical or moral peculiarity of character, make each thing a picture. No matter what knowledge, intellect, courage, or good qualities they may have, these men are unfit to command armies, or to direct great operations in war.

"Generals-in-chief must be guided by experience or by their own genius. Men who have much genius and little character are the least proper — it is a ship whose rigging is out of proportion to its ballast. It is better to have much character and little genius. Men who have ordinary genius and a proportioned character will succeed often in this calling; there is necessary as much of base as of height. The general who has much genius and character — it is CÆSAR, HANNIBAL, TURENNE, Prince EUGÈNE and FREDERICK. It is the will, the character, the application and the audacity which has made me what I am."

Whatever may be the qualities which those entrusted with commanding may possess, it is not without interest to observe that in our time they should be more developed than formerly.

This fact is the consequence of the augmentation of armies, of the multiplicity of the elements of which they are composed, and the extension of the theatres of war

FREDERICK II. commanded armies of 30,000 to 50,000 men. NAPOLEON had under his orders considerable masses, but usually they operated under his eyes in compact masses. To-day a general-in-chief must direct two, three or four armies of 150,000 to 200,000 men each. Consequently, nearly a million men. In a battle, it would be difficult to find a point from whence he could perceive the whole of his troops and their movements. In all cases he is too far off to exercise a personal command over the wings. Often, when he sends an order, the situation that his order concerns is modified upon the arrival of the messenger who brought it. There result from this state of affairs the greatest difficulties, which call for faculties more powerful, greater habit of originating and above all a *will* more reflective and stronger than ever.

PENETRATING CAVALRY CHARGES.

Experiments Made in Camp Krassnoe Sselo, Russia.

(*From the Russian Invalid, No. 13.*)

TRANSLATED FROM THE "MILITAER WOCHENBLATT," NO. 82, 1888,

By Second Lieut. Carl Koops, 13th Infantry.

IT is well-known that Suworow greatly valued the so-called penetrating charges of cavalry as a means of instruction, and always endeavored to have these charges resemble as much as possible, those made in actual warfare. This result he partly obtained by requiring opposing forces to pass through each others lines.

Adjutant General Dragomirow has lately revived Suworow's idea of practicing charges. Although there are many adverse to this method, and pronounce it antiquated, Dragomirow has succeeded in convincing the highest authorities of the correctness of his principle. The soldier must practice in time of peace, all that he is required to perform in time of war, and that only.

The Russian tactics prescribe that each manœuvre of a detachment shall conclude with a penetrating charge. But as nobody knew exactly how to execute them, that paragraph had been for a long while a dead letter.

Last summer, however, Grand Prince Wladimir, as commanding officer of all troops in Camp Krassnoe Sselo, made penetrating charges a part of the programme of exercises. Those charges were successfully executed in the presence of the highest authorities and a great many other officers.

The troops detailed for this exercise were a battalion of infantry, a battery, and a regiment of cavalry. In the commencement of the exercise, the troops were in line of battle. First line, the infantry, in rear of them the battery, and eight hundred paces in rear of it, the cavalry, in column of squadrons, dismounted and standing to horse.

The programme was as follows:

1. The cavalry to ride through the infantry at a walk and to return at a trot.

2. The infantry to pass through the cavalry, first with the front rank in front, then with the rear rank in front.

3. The cavalry to ride through the infantry and artillery while they are firing.

In addition to the above, the following exercises were executed:

4. The infantry were mounted on the croups of the cavalry horses.

5. Infantry advancing rapidly by holding on to the manes of the cavalry horses.

The instructions of Grand Prince Wladimir also drew attention to the fact that circumstances might arise which would not give cavalry in withdrawing, sufficient time to pass by the flanks of the infantry. In this case, the cavalry would be justified in passing through the infantry line; but it should never mask the artillery, as it is its duty to cover with its fire the retiring cavalry. Should skirmishers have been deployed, they must assemble in groups opposite the squadron intervals, and deploy again when the cavalry has passed. The instructions further directed that infantry in line should form column of companies by battalions, when the cavalry, for the purpose of pursuing the enemy, had to pass through the line of the infantry from the rear.

The first part of the programme was executed in the following manner:

The regiment of cavalry was formed in column of divisions, each squadron in column of double platoons; the artillery in line; the infantry in two lines, without interval between the companies, the second line 100 paces from the first. The infantry and cannoneers were then faced about, this brought them facing the cavalry.

The first division of the cavalry, then advanced, each platoon in column of six formed to right. Having arrived at the battery, the cavalry halted and the troopers rode around the guns, and as near to them as possible, to accustom their horses to the sight of them. The second division now followed, and the first advanced to the lines of infantry and halted. Immediately before the arrival of the cavalry, the infantry formed column of platoons. The cavalry then marched between the columns of infantry and halted again. The infantry broke ranks, and the men going between the ranks of cavalry, patted and carressed the horses, at the same time the infantry buglers sounded their instruments and swung their arms wildly in the air. The return march was made in a similar manner, but at a trot.

To execute the second part of the programme, the infantry formed a column of platoons, left in front, and opened files to the right, with an interval of three paces between files. The cavalry assumed a corresponding formation, with the same interval between files. The infantry then advanced, the band playing and the men singing. On nearing the cavalry the infantry halted and executed "order arms" with much noise. The infantry broke ranks and mingled with the cavalry, executing the manual of arms, and throwing themselves on the ground, to rise again quickly; after that they passed through the cavalry shouting, "Provit Comrades." The infantry returned in a similar manner, the second line now in front.

PENETRATING CAVALRY CHARGES.

EXPERIMENTS MADE IN CAMP KRASSNOE SSELO, RUSSIA.

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BY SECOND LIEUT. CARL KOOIS, 13th INFANTRY.

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For the execution of the third part of the programme, the cavalry remained in the same formation; the artillery was still in their original place and formation; and the infantry marched 300 paces to the rear and doubled files, thus giving an interval of six paces between files. Each file now consisting of four men, had its first man at "order arms," those in rear at "charge bayonet." The cavalry now charged at full speed, first the artillery, then the lines of infantry. The troops attacked fired when the charging cavalry had arrived quite near them. The reporter of the "Russian Invalide" does not state how the horses behaved on this occasion, but an eye witness of a similar experiment made by the Russian cavalry states that, when the smoke disappeared, quite a number of horses, and some of them without riders, could be seen galloping about in rear of the original front. The infantry also had received the charge not without some accidents. In order to allay the fear caused by the fire delivered directly in their eyes, the horses were fed and carressed immediately after having passed the firing lines.

The execution of the fourth part of the programme. To mount the infantryman behind a trooper, the latter lets go the left stirrup. The infantryman grasps a lock of the mane with the left hand, inserts his left foot in the stirrup, takes hold of the cantle with his right hand, and then swings himself on the croup of the horse, behind the pack of which he takes hold. Some simple evolutions were executed, which were entirely successful. The infantrymen seemed to enjoy these exercises.

The fifth part of the programme was also successfully executed. The infantry advanced rapidly with the cavalry, by holding on to the stirrups or manes of the horses. Considerable distances could be passed over in this manner without much trouble to horse or rider. It was found best for the infantryman to conform to the movements of the horse.

The experiment was also made of using cavalry horses as draught horses for the artillery. Most of the horses did the unaccustomed work willingly; nevertheless, it was considered best to have some trained draught horses in each squadron.

The report on these exercises lays stress on the fact that the manner and means of execution were entirely in accordance with the third part of an article by Adjutant General DRAGOMIROW, "An Attempt at a Text Book to Prepare Troops for Actual Warfare." DRAGOMIROW, in this article, dwells with great emphasis on the necessity that troops of the different branches of the service should be accustomed to mutual support, and should consider themselves members of one body. Now this educational tendency finds full application in the above described exercises, which could equally well be called "making friends of the different arms of the service." Disregarding the existing antagonism between the different arms and even regiments of the same arm, and which is found

not in Russia alone, some troops, from stations garrisoned by their arm only, would never get acquainted with other arms, beyond seeing them at some distance during the manœuvres.

In the above exercises the penetrating troops greet each other. The infantryman caresses his brother soldiers' horse. The cannoneer feeds him with bread. An eye witness of these exercises stated that they generated an evident, and probably permanent, friendship between two riders of one horse. The fact that these infantrymen proved apt scholars in horsemanship, augmented the friendly feeling considerably.

The report further recommends that these exercises should be held whenever opportunity is favorable, and not at regular fixed times. It would be an undeniable gain to have horses trained to advance fearlessly against firing infantry and artillery.

At stations garrisoned by cavalry only, dismounted troopers could act as infantry. But that would never be more than a poor make-shift, in the opinion of the Russian reporter, as dismounted cavalry does not present the same appearance as infantry, and it would be contrary to the spirit of cavalry if they did present the same appearance.

These remarks of the reporter, who is an officer of considerable rank, reveal a reaction from the idea of considering a dragoon dismounted of equal fighting value with an infantryman.

The present controversies in the Russian army about discarding the bayonet of the carbines can also be considered in the same spirit.

In close connection with this are the experiments in utilizing the rapidity and strength of horses for rapid movements of infantry.

EXTRACTS.

REPORT OF THE COMMITTEE ON THE CONDUCT OF THE WAR.

REPORT OF MAJOR GENERAL A. PLEASANTON, LATE COMMANDER OF CAVALRY CORPS, ARMY OF THE POTOMAC.

MILWAUKEE, WISCONSIN, October 15, 1865.

The first most important and prominent step in the prosecution of the war, and one whose consequences were felt to the end, was the defective and injurious organization given to the Army of the Potomac in the winter of 1861-'62. It was most unfortunate, that, with the finest men and material ever furnished to any army of the world, that army should have been organized with so little reference to the rules of war governing the organization of armies. The highest military authorities have laid down, that, in the proper organization of an army, the cavalry should form from one-fourth to one-sixth of the infantry which composes it. This relation of the cavalry to the infantry is so important, in consequence of the necessary duties assigned to each in time of war, that it may fairly be said no army is fit to take the field unless these two arms are properly organized and bear the proper proportion to each other in respect to numbers; and it is also a strong fact, which the war has demonstrated, that the more closely these proportions are observed throughout the campaign the greater will be the success, and the greater will be the confidence reposed by the troops of the different arms in each other; which greatly tends to lighten their most arduous duties. It is a vicious organization that requires the infantry to supply the deficiencies of service for want of sufficient cavalry, or the reverse; or, that imposes upon a small body of cavalry the arduous and ruinous service that should only be borne by thrice their number.

With eighty thousand cavalry on the pay-rolls of the country in the winter of 1862, the Army of the Potomac was kept so deplorably deficient in cavalry as to be unable to ascertain what the enemy were doing at Fairfax and Manassas; were unable to raise the blockade of the Potomac; and the rebels had finally moved away from those places in the spring before our army had started in pursuit. Does any one now assert that those obstacles could not have been removed by twenty thousand cavalry, properly supported by that army? So little interest was taken in the organization, support, and efficiency of the cavalry that it became more of a farce than the earnest effort to create an important arm to advance against the enemy.

I served with the Army of the Potomac from October, 1861, until March, 1864, in the various capacities of regimental, brigade, division, and corps commander of cavalry. My constant theme was the proper increase and organization of the cavalry, and, from what has since been done, I am confirmed in the opinion formed at that time, that if the proper steps had been taken that winter of 1862, a superb cavalry corps could have been organized by the spring, in which event the Peninsula campaign, one of the bad consequences resulting from the neglect of the cavalry, would not have been forced upon us. MCCLELLAN dreaded the rebel cavalry, and supposed that, by placing his army on a peninsula with a deep river on each side, he was safe from that arm of the enemy; but the humiliation on the Chickahominy of having a few thousand of the enemy's cavalry ride completely around his army, and the ignominious retreat to Harrison's Landing, are additional instances in support of the maxim, "that a general who disregards the rules of war finds himself overwhelmed by the consequences of such neglect when the crisis of battle follows."

While the cavalry arm was thus neglected in the organization of the army, the infantry force, which was upwards of one hundred and thirty thousand men, was kept in divisions until the army entered the field in the spring, when the corps formation was adopted; but so indifferently, however, that the command of the corps fell upon officers of no higher grade than that of brigadier general. This carelessness of assignment, by rendering every high officer uncertain of the position he held, was a fruitful source of the jealousies and dissensions that afterwards occurred among the commanders in this army, and which did so much to retard and frustrate the best devised plans that were attempted to be executed, and taken in connection with the useless superabundance of artillery with which at that time the army was supplied, and which was without higher organization than that of the battery, added to the other causes mentioned, prevented that unity of action, compactness, consilence, mobility, courage, energy, and enterprise in the army, which are so essential in the prosecution of successful warfare.

General HOOKER was the first commander of the Army of the Potomac to exhibit a correct appreciation of organization in an army. He consolidated and increased his cavalry, organized them into a corps, supplied them with artillery, and was rewarded by some distinguished service that made the march of his army a triumph from Falmouth to Frederick City.

The campaign of Gettysburg, which he commenced so brilliantly, was afterwards conducted by his successor with such results as to produce the deepest mortification throughout the country. The doubt, hesitation, and fear of consequences displayed by General MEADE, were in striking contrast to the heroic valor so constantly and stubbornly exhibited by the army. Never did the cavalry, though few in numbers for the labors assigned them, perform more brilliant and successful deeds of arms than those which, after the battle of Gettysburg, brought to bay a shattered, baffled, and beaten army at Falling Waters, on the banks of the Potomac, in July, 1863. The army was eager for the attack; they knew the end of the rebellion was within their grasp, but their commander, General MEADE, receiving no inspiration from their genius, only held them back until the enemy had escaped. The same fear of consequences which animated General MEADE, caused the army to fall back from Culpeper to Centreville, in the fall of 1863, when the Rebels advanced and took from the campaign of Gettysburg whatever might have been claimed for it on the score of generalship, and the Mine Run campaign showed so plainly that General MEADE was deficient in the qualities required for a commander, that it was not surprising to see Lieutenant General GRANT, a short time after, assume the personal direction of the Army of the Potomac.

It is a very important fact that the numbers of the cavalry in that army were then more nearly in the proper proportion to those of the infantry than at any other time in its history, and the noble record of the cavalry and of the army while under General GRANT can consequently be accepted as one of the results of observing that important principle of war—the proper organization of an army.

In reviewing this subject it is well to observe that the success of the Rebel army in Virginia, for the first two years of the war, was mainly due to its superior organization, and to the splendid corps of cavalry it was able to maintain. That army was not hampered with a surplus of artillery, and its numerous and efficient cavalry kept its commander well informed of our movements. But when the casualties of war reduced this calvary faster than they could replace them, which was the case in the campaigns of 1863, the army was soon thrown upon the defensive, from which it was never after able to recover. We then deduce the following facts: that the Army of the Potomac was better organized in the later periods of the war than at the beginning, while the reverse was the case with the Rebel army. The successes of either army bore a marked correspondence to its superior organization to that of its opponent, at the time of achievement. The question then recurs, could not the war have been much sooner closed by giving to the Army of the Potomac a proper organization at the beginning? The government should now decide this question, and if responded to in the affirmative, make the necessary corrections to prevent similar evils in our military system hereafter.

CAMPAIGN OF THE PENINSULA.

In the campaign of the Peninsula I commanded the second regiment of United States cavalry until the army arrived at Harrison's Landing, when I was made a brigadier general of volunteers, and commanded a brigade of cavalry in the second action at Malvern Hill on the 5th of August, 1862, and also covered the withdrawal of the army from the Peninsula. Throughout this campaign there was a decided want of vigor in the conduct of the army, and the first great mistake was made in permitting the rebels to occupy and re-enforce Yorktown before taking possession of it. Some thirty days' delay occurred in laying siege to Yorktown, when it might have been taken by assault the first few days after the army arrived before it; at all events, the importance of time at that period was such as to make an attempt worthy of a

trial. The time lost at Yorktown and on the Chickahominy gave the Rebels an opportunity to gather their forces to defend Richmond; and the error committed in placing the army on both sides of the Chickahominy enabled the enemy to cripple first our left wing at Fair Oaks and Seven Pines, and afterwards our right wing at Mechanicsville and Gaines' Mill, and by the moral effect of these partial actions caused the army to retreat to James river. There appeared no disposition throughout this campaign to bring the entire army into action as an army; there was no controlling spirit so decidedly strong as to effect the necessary concert of action in the different portions of the army, and, as a consequence, the battles that took place resulted from the enemy's successively massing heavier forces on our detached corps, which were outnumbered, beaten in detail, and compelled to retreat. It has been claimed that more troops should have been furnished the army for the purpose of taking Richmond; but the facts of the case do not support this assertion, as the troops that were in the army were never all used and fought in connection with and in support of each other, as should have been done. To have increased these large masses, without material change in the manner of fighting them from that which had been adopted, would not have changed the ultimate result from what it was, and would have only added to the embarrassments which already existed. Besides the causes already mentioned, there were numerous oversights and neglects bearing upon discipline, and which also had a serious influence upon the success of the campaign. Very little was done to excite the energy, emulation, and enthusiasm of the troops, while some measures were adopted that had a decided tendency to diminish these necessary qualities in a marked degree. At Yorktown an order from headquarters prohibited all music by bands and all calls by either drums or bugles, and they were not resumed until after the army had arrived at Harrison's Landing. When the large masses of men which composed the Army of the Potomac were moving among the swamps of the Chickahominy, without any of the enlivening sounds of martial music, or the various well-known calls of an army life, the effect was very depressing, and caused the soldiers to exaggerate the issue that required of them to lose the most agreeable part of their profession. The army, however, had gone to the Peninsula very enthusiastic, the soldiers always earnest and faithful in the discharge of their duties; and although the field for the campaign had been badly selected, and there were numerous drawbacks to disappoint their hopes, there were also several occasions won by their valor when a bold, determined, resolute commander could have forced the result to a successful issue.

CAMPAIGN OF ANTIETAM.

In this campaign I commanded the cavalry division of the army, and took the advance from Washington city through Maryland and until the field of Antietam was reached, when I fought my command in front of the bridge leading from Keedysville to Sharpsburg, and held the centre of our army throughout the battle. The same mistakes were made in this campaign that characterized that of the Peninsula. The army was not moved with sufficient rapidity or vigor from the Peninsula or through Maryland, and the enemy was again given time to prepare and concentrate. When the battle was delivered it was fought by detached commands in such positions as to be unable to give or receive assistance from each other. HOOKER'S, FRANKLIN'S, and SUMNER'S corps were on the right, too distant to receive support from the rest of the forces, while BURNSIDE'S forces were on the left, at least three miles from where my command was, without any troops being between us, and with Antietam creek, which was not fordable, behind us. FITZ JOHN PORTER'S corps was behind my position a mile and a half on the opposite side of the creek as a reserve, but it was never brought into action. Notwithstanding the disadvantages our army labored under from these arrangements, a decisive victory could have been won at 4 o'clock on the afternoon of the 17th of September, if a strong attack had been made on Sharpsburg from the centre. My command had cleared the enemy from my front and were in high spirits, while the stubborn fighting of the army generally had told fearfully upon the Rebels. I therefore recommended this attack, and requested to be permitted to take the initiative in it. The proposition was not approved, and I was directed to hold the position I then had. The enemy were then so far off, falling back, my guns could not reach them, and the battle ended so far as my command was concerned. On the next day the army was not permitted to advance, and on the 19th the enemy had crossed the Potomac and escaped. The Rebel army had suffered so much more than ours in this campaign, and their ammunition was so much exhausted, that I was convinced a rapid and energetic pursuit would have routed them, if it had not caused Lee himself to surrender. Colonel DAVIS, of the Eighth New York Cavalry, had, before the battle, destroyed all the ammunition belonging to LONGSTREET'S corps, and the heavy demands of the fight had nearly exhausted the supply for the rest of their army. This, with the disappointment of the rebel soldiers at the failure of their enterprise to invade Pennsylvania, were advantages which should not have been thrown away.

Another opportunity for success was offered when the army was at Warrenton, in the fall of 1862. The Rebel force was then divided; LONGSTREET and A. P. HILL, with their corps, being at Culpeper, while STONEWALL JACKSON and D. H. HILL were in the Shenandoah valley, at Front Royal. By crushing LONGSTREET at Culpeper the army would cripple that of the Rebels and would cut it off from Richmond. Culpeper should have been occupied. It was at this time that General BURNSIDE assumed command of the army, and unfortunately decided to march on Fredericksburg. The details of that campaign have already been so thoroughly examined by your honorable committee as to leave nothing to be said in reference to it except perhaps, that the cavalry bore no prominent part in it.

CAMPAIGN OF CHANCELLORSVILLE.

In this campaign my command was the first cavalry division of the Army of the Potomac, the 1st Brigade of which during the battle was with General STONEMAN on his raid towards Richmond, in rear of LEE'S army. With one brigade I preceded the 11th and 12th Corps as far as Chancellorsville. The movements of the 5th, 11th and 12th Corps across the Rappahannock and Rapidan rivers were very fine and masterly, and were executed with such secrecy that the enemy were not aware of them, for on the 30th of April, 1863, I captured a courier from General LEE, commanding the Rebel army, bearing a dispatch from General LEE to General ANDERSON, and written only one hour before, stating to General ANDERSON he had just been informed we had crossed in force, when, in fact, our three corps had been south of the Rapidan the night previous, and were then only five miles from Chancellorsville. The brilliant success of these preparatory movements, I was under the impression, gave General HOOKER an undue confidence as to his being master of the situation, and all the necessary steps were not taken on his arrival at Chancellorsville to insure complete success. The country around Chancellorsville was too cramped to admit of our whole army being properly developed there, and two corps, the 11th and 12th, should have been thrown on the night of the 30th of April to Spottsylvania Court House, with orders to intrench, while the remainder of the army should have been disposed so as to support them. This would have compelled General LEE to attack our whole force or retire with his flank exposed, a dangerous operation in war, or else remain in position and receive the attack of SEDGWICK in rear and HOOKER in front, a still worse dilemma.

In the third day's fight at Chancellorsville General HOOKER was badly stunned by the concussion of a shell against a post near which he was standing, and from which he did not recover sufficiently during the battle to resume the proper command of the army. The plan of this campaign was a bold one and was more judicious than was generally supposed from the large force General HOOKER had at his command. There is always one disadvantage, however, attending the sending off of large detachments near the day of battle. War is such an uncertain game it can scarcely be expected that all the details in the best devised plans will meet with success, and unless a general is prepared and expects to replace at once, by new combinations, such parts of his plans as fail, he will be defeated in his campaign, and as these changes are often rapid, he cannot include his distant detachments in his new plans with any certainty, and the doubt their absence creates reduces the army he can depend on to the actual number of men he has in hand. If General HOOKER had not been injured at the commencement of the final battle, I am not certain his splendid fighting qualities would not have won for him the victory. It was in this battle that with three regiments of cavalry and twenty-two pieces of artillery I checked the attack of the Rebel general, STONEWALL JACKSON, after he had routed the 11th Corps. JACKSON had been moving his corps of twenty-five or thirty thousand men through the woods throughout the day of the 2d of May, 1863, from the left to the right of our army, and about six o'clock in the evening he struck the right and rear of the 11th Corps with one of those characteristic attacks that made the Rebel army so terrible when he was with it, and which was lost to them in his death. In a very short time he doubled up the 11th Corps into a disordered mass, that soon sought safety in flight. My command of three cavalry regiments and one battery of six guns happened to be near this scene, and perceiving at a glance that if this rout was not checked the ruin of the whole army would be involved, I immediately ordered one of my regiments to charge the woods from which the rebels were issuing and hold them until I could bring some guns into position; then charging several squadrons into our flying masses to clear ground for my battery, it was brought up at a run, while staff officers and troops were despatched to seize from the rout all the guns possible. The brilliant charge of the regiment into the woods detained the Rebels some ten minutes, but in that short time such was the energy displayed by my command, I placed in line twenty-two pieces of artillery, double-shotted with canister, and aimed low, with the remainder of the cavalry supporting them. Dusk was now rapidly approaching, with an apparent lull in the fight, when heavy masses of men could be seen in the edge of the woods, having a single flag—

and that the flag of the United States—while at the same time they cried out: "Don't shoot, we are friends!" In an instant an aide-de-camp galloped out to ascertain the truth, when a withering fire of musketry was opened on us by this very gallant foe; who now dropped our ensign, displayed ten or twelve rebel battle-flags, and with loud yells charged the guns. When gave the command "fire," and the terrible volley delivered at less than two hundred yards' distance caused the thick moving masses of the rebels to stagger, cease from yelling, and for a moment discontinue their musket fire, but they were in such numbers, had such an indomitable leader, and they had so great a prize within their reach, that they soon rallied and came on again with increased energy and force, to be met by the artillery, served well and rapidly, and with such advantage that the Rebels were never able to make a permanent lodgement at the guns, which many of their adventurous spirits succeeded in reaching. This fight lasted fully about an hour, when a final charge was made and repulsed; they then sullenly retired to the woods. It was at this time that General JACKSON was mortally wounded, and as the Rebel authorities have published he had been killed by his own men, I shall mention some facts of so strong a character as to refute this statement. Soon after the last attack I captured some of the Rebel soldiers in the woods, and they told me it was JACKSON'S corps that had made this fight; that JACKSON himself had directed it, and had been mortally wounded, and that their loss was very heavy. I have since met Rebel officers who were then engaged, and they corroborated the above statement, and they added that it was known and believed among JACKSON'S men that he had been mortally wounded by our own fire. Again, one of my own officers who had been taken prisoner in that engagement told me, after he was exchanged, that he had been taken up to JACKSON soon after his capture; that JACKSON questioned him about our force, and that he then was not far from our lines. This clearly proves that JACKSON was on the field, in command, and had not been wounded up to and until after the fight had commenced. Now, when it is remembered, the entire front of my line did not occupy six hundred yards; that the opposing forces were in open ground, not three hundred yards from each other, and so close that no reconnoissance in front was necessary by an officer of JACKSON'S rank, and taken in connection with the fact that the fierce characteristic of the attacks of the man did not cease until he was wounded, and were not renewed after he was, the conclusion is simple, natural and forcible that JACKSON commanded and fell in his attack on our guns. In justice to the high character, as a general, of JACKSON, I am free to admit that had he not been wounded, and had made another attack, as he undoubtedly would have done, he would have carried my position, for my losses had already disabled more than half my guns, and the few that were left could have easily been overpowered. There seemed a providential interference in JACKSON'S removal at the critical time in which it occurred, for the position fought for by him commanded and enfiladed our whole army, and had he won it on the rout of the 11th Corps, the disaster to us would have been irreparable.

CAMPAIGN OF GETTYSBURG.

I was placed in command of the cavalry corps of the Army of the Potomac and made a major general of volunteers after the battle of Chancellorsville, and the campaign of Gettysburg began by my attacking the Rebel cavalry at Beverly Ford, on the Rappahannock river, on the 9th of June, 1863. The rebels were defeated and very important information was obtained relative to their proposed invasion of Pennsylvania, upon which General HOOKER acted immediately, and moved his army towards Maryland. On the 17th, the 19th and the 21st of June, 1863, I again attacked the Rebels at Aldie, at Middleburg and Upperville with such success that General LEE abandoned his design of crossing the Potomac at Poolesville, and moved the bulk of his army to Hagerstown, by the way of Williamsport, and from thence to Chambersburg. When our army had arrived at Frederick City, General HOOKER was relieved from the command and General MEADE was assigned in his place. General HOOKER left the army in fine condition and discipline and well in hand, and he had the confidence of the troops in his ability to command them.

General MEADE sent for me soon after his assignment and in discussing the subject of the campaign I mentioned that from my knowledge of the country obtained the year before, in the Antietam campaign, I considered the result of the present one depended entirely upon which of the two armies first obtained possession of Gettysburg, as that was so strong a position that either army, by holding it, could defeat the other; that General LEE knew this and would undoubtedly make for it. But in the disposition of the army for the march I saw that General MEADE did not attach that importance to the subject that it deserved, and that he was more impressed with the idea that LEE intended crossing the Susquehanna river, and accordingly threw the bulk of his army too far to the east of Gettysburg. Seeing this I directed General BUFORD, who commanded the 1st Cavalry Division, and who was ordered to Gettysburg, to hold that place at all hazards until our infantry could come up.

BUFORD arrived at Gettysburg on the night of the 30th of June, 1863, in advance of the enemy, and moved out the next day very early, about four miles on the Cashtown road, when he met A. P. HILL'S corps of the enemy, thirty thousand strong, moving down to occupy Gettysburg: LEE thus doing exactly what I informed General MEADE he would do. BUFORD with his four thousand cavalry attacked HILL and for four hours splendidly resisted his advance until REYNOLDS and HOWARD were able to hurry to the field and give their assistance. To the intrepidity, courage and fidelity of General BUFORD and his brave division the country and the army owe the battle-field of Gettysburg. His unequal fight of four thousand men against eight times their numbers and his saving the field made BUFORD the true hero of that battle. While this terrible fight of the first day was raging, having been commenced by BUFORD in the morning and continued by REYNOLDS and HOWARD in the evening, General MEADE was seventeen miles off, at Taneytown, leisurely planning a line of battle on some obscure creek between that and Gettysburg, when he was aroused by a dispatch from BUFORD, through me, stating REYNOLDS was killed, the field was becoming disordered, and if he expected to save it the army must be moved up at once. The different corps were then directed to march on Gettysburg, but some were so distant, SEDGWICK in particular, that it did not arrive on the field until sundown of the 2d of July, after having marched thirty five miles. General MEADE did not himself reach the field until one o'clock on the morning of the 2d, long after the first day's fight had been brought to a close.

On the 2d of July, 1863, that portion of the army that was on the field was placed in a defensive position, but General MEADE had so little assurance in his own ability to maintain himself, or in the strength of his position, that when the Rebels partially broke our line in the afternoon of the 2d he directed me to collect what cavalry I could and prepare to cover the retreat of the army, and I was thus engaged until 12 o'clock that night. I mention this fact now because when I was before your honorable committee and was asked the question whether General MEADE ever had any idea of retreating from Gettysburg, I answered that I did not remember, the above circumstances at that time being out of my mind, and it was only afterwards recalled by my staff officers on my return to camp.

On the 3d of July, 1863, the last day of the battle of Gettysburg, and immediately after the final repulse of the Rebels, I urged General MEADE to advance his whole army and attack them, but he refused to do so quite angrily, and his remarks showed that he did not or would not understand the events that were occurring around him. He directed me to send the cavalry and ascertain if the enemy were retreating, which was done at once, but as the cavalry was at some distance from the army, it was not until 8 o'clock the next morning that the first report of the cavalry on the Cashtown road was received, showing the enemy were twenty-two miles off, and getting away as fast as they could. The cavalry was continued in pursuit, but the remainder of the army did not leave Gettysburg for several days after the Rebels had left, and were then moved in such a leisurely manner as to show no great anxiety by the commander to overtake the Rebels. Very unexpectedly to the army and to the Rebels, the heavy rains caused the Potomac to rise so rapidly that LEE could not cross, and he was again brought face to face with the Army of the Potomac at Falling Waters. Every military reason demanded that the Rebels should be immediately attacked, for after three days' heavy fighting at Gettysburg it was a moderate conclusion to arrive at that the Rebels were short of ammunition, and could not sustain a protracted fight. General LEE admitted this afterwards in his official report, and expected to be attacked, when he says: "Our artillery having nearly expended its ammunition," and again, "the enemy in force reached our front on the 12th. A position had been previously selected to cover the Potomac from Williamsport to Falling Waters, and an attack was awaited during that and the succeeding day. This did not take place, though the two armies were in close proximity; the enemy being occupied in fortifying his own lines." The Army of the Potomac having had all its wants supplied since the battle of Gettysburg, and with the prestige of that battle was eager for the fight, and was in good condition for it.

Here General MEADE again refused to fight and waited a whole day until the Rebels had succeeded in crossing the river and had again escaped.

The army thus lost the fruits of all its arduous toils, struggles and triumphs, and the country had entailed upon it a prolonged war for two years more, with its innumerable sacrifices of blood and treasure.

In reviewing the battle and campaign of Gettysburg, when we notice that General MEADE was absent from the first day's fight; that he was occupied with the idea of retreating on the second day, and after his indomitable army had repulsed and badly beaten the Rebel army on the third day, he refused to allow them to complete their victory, and still later, when fortune again unexpectedly thrust the Rebels in our power at Falling Waters, he doggedly refused to fight, but waited until they could escape, we are forced to the conclusion that General MEADE

was unable to fight the Army of the Potomac as it should have been fought, nor could he avail himself of the advantages which the valor of his troops at times gave him, and that the honors of that campaign are not due to any generalship that he displayed, but to the heroic bravery, patriotism and perseverance of the army.

THE RETREAT FROM CULPEPER.

General MEADE had occupied Culpeper with his army about the middle of September, 1863, General LEE's army being south of the Rapidan.

The army had been at Culpeper about a month when General MEADE decided to make an offensive demonstration against LEE, for which purpose BUFORD's division of cavalry were ordered to cross the Rapidan at Germania Ford and then uncover Raccoon Ford, where NEWTON's corps was to assist him.

After BUFORD had started and was too far off to be recalled, General LEE put his army in motion towards our right, which so alarmed General MEADE that he made his preparations to retreat from Culpeper, and so precipitate were his movements that BUFORD's division was very near being cut off, while the army was hastily marched to the rear. General LEE finding he could move General MEADE so easily, urged him back as far as Centreville, and when the latter took up a position near that place, LEE contented himself with destroying the railroad we had left behind and retired on Culpeper.

REPORT OF THE COMMITTEE ON THE CONDUCT OF THE WAR.

REPORT OF OPERATIONS OF THE CAVALRY CORPS, ARMY OF THE POTOMAC, FROM APRIL 6, TO AUGUST 4, 1864, BY MAJOR GENERAL P. H. SHERIDAN, U. S. A., COMMANDER.

HEADQUARTERS MILITARY DIVISION OF THE GULF,
NEW ORLEANS, LA., May 13, 1866.

GENERAL:—I have the honor to make the following report of the operations of the Cavalry Corps, Army of the Potomac, from April 6, 1864, to August 4, 1864:

WILDERNESS.

On March 27, 1864, I was relieved from the command of the Second Division, 4th Corps, Army of the Cumberland, to take command of the Cavalry Corps, Army of the Potomac, and on the 4th of April, in General Order No. 144, current series, War Department, I was assigned to that corps, then lying in the vicinity of Brandy Station, Virginia.

The corps consisted of three divisions and twelve (12) batteries horse artillery, and in a few days after I joined was adjusted as follows: Brigadier General A. T. A. TORBERT to command the First Division; Brigadier General D. McM. GREGG, the Second Division; and Brigadier General J. H. WILSON, the Third Division; the artillery being under the command of Captain ROBINSON, United States Army. The officers and men were in pretty good condition, so far as health and equipment were concerned, but their horses were thin and very much worn out by excessive and, it seemed to me, unnecessary picket duty; the picket line almost completely encircling the infantry and artillery camps of the army, covering a distance, if stretched out on a continuous line, of nearly sixty miles. The enemy, more wise, had been husbanding the strength and efficiency of his horses by sending them to the rear, in order to bring them out in the spring in good condition for the impending campaign; however, shortly after my taking command, much of the picketing was done away with, and we had about two weeks of leisure time to nurse the horses, on which so much depended; consequently, on the 4th of May, when the campaign opened, I found myself with about ten thousand (10,000) effective men, and the same number of horses in passable trim.

After carefully studying the topography of the country from the Rapidan to Richmond, which is of a thickly wooded character, its numerous and almost parallel streams nearly all uniting, forming the York river, I took up the idea that our cavalry ought to fight the enemy's cavalry, and our infantry the enemy's infantry. I was strengthened in this impression still

more by the consciousness of a want of appreciation on the part of infantry commanders as to the power of a large and well managed body of horse, but as it was difficult to overcome the established custom of wasting cavalry for the protection of trains, and for the establishment of cordons around a sleeping infantry force, we had to bide our time.

On May 4th the army moved; GREGG's division taking the advance to Ely's ford on the Rapidan; WILSON's the advance to Germania ford on the same stream; TORBERT's covering the trains of the army in rear, holding from Mitchell's Station to Culpeper, and around Stevensburg, and strongly picketing the fords from Germania ford to Rapidan Station.

As soon as the 2d Corps reached Ely's ford, GREGG moved to Chancellorsville; and, upon the 5th Corps reaching Germania ford, WILSON made the crossing of the Rapidan, moved through Old Wilderness, and advanced to Parker's store.

On the 5th TORBERT joined me at Chancellorsville, and General MEADE ordered WILSON in the direction of CRAIG's meeting house, where he was attacked, and, after a sharp engagement, driven back, via Shady Grove church, to Todd's Tavern. It was necessary for him to take this route, as the enemy's infantry had advanced from the direction of Orange Court House, and had occupied Parker's store and the direct road back to our army.

When General MEADE discovered that WILSON was cut off, he sent word to me, near Chancellorsville, to go to his relief, and I immediately despatched General GREGG's division in the direction of Todd's Tavern, where he met WILSON, who was still being followed up.

The enemy's pursuing force was attacked by GREGG at this place, defeated, and driven to Shady Grove church, a distance of three or four miles.

It was now well understood that the enemy's cavalry at Hamilton's Crossing had joined General Lee's forces, and the necessity for my moving to that point, as ordered, was obviated.

As I was held responsible for the left flank of our army and the trains, I made such disposition of the troops under my command as to hold the line of the Brock road beyond the Furnaces, and thence around to Todd's tavern and Piney Branch church, but General MEADE, on false report, became alarmed about his left, and notified me in the following note that HANCOCK's left had been turned, and directed me to draw in my forces to protect the trains:

HEADQUARTERS ARMY OF THE POTOMAC,
May 6, 1864—1 o'clock P. M.

Major General Sheridan, Commanding Cavalry Corps:

Your despatch of 11:45 A. M. received. General HANCOCK has been heavily pressed, and his left turned. The major general commanding thinks that you had better draw in your cavalry so as to secure the protection of the trains.

The order requiring an escort for the wagons to-night has been rescinded.

A. A. HUMPHREYS,
Major General, Chief of Staff.

I obeyed this order, and the enemy took possession of the Furnaces, Todd's Tavern, and Piney Branch Church, the regaining of which cost much fighting on the 6th and 7th, and very many gallant officers and men.

On the 6th CUSTER fought at the Furnaces, and defeated the enemy, who left his dead and wounded in our hands.

TODD'S TAVERN.

On the 7th the trains of the army, under direction from headquarters Army of the Potomac, were put in motion to go into park at Piney Branch Church. As this point was held by the enemy I was confident that the order must have been given without fully understanding the condition of affairs, and therefore thought the best way to remedy the trouble was to halt the trains in the vicinity of Aldrich's, attack the enemy and regain the ground. This led to the battle of Todd's Tavern, in which the enemy was defeated. GREGG attacked with one of his brigades on the Catharpen road, and drove the enemy over Corbin's bridge; MERRITT, who was in command of the first division during the temporary absence of TORBERT, attacked with his division, on the Spottsylvania road, driving him towards Spottsylvania, and DAVIES' brigade of GREGG's division made a handsome attack on the Piney Branch Church road, uniting with MERRITT on the Spottsylvania road. The pursuit was kept up until dark. GREGG's and MERRITT's divisions encamped in open fields in the vicinity of Todd's Tavern, with orders to move in the morning, at daylight, for the purpose of gaining possession of Snell's bridge, over the Po river. To accomplish this, WILSON, who was at Alsop's house, was directed to take possession of Spottsylvania early on the morning of the 8th, and thence move into position at Snell's bridge. GREGG and MERRITT were ordered to proceed to the same point; the former via the crossing at Corbin's bridge, the latter by the Block house.

Had these movements been carried out successfully, it would probably have sufficiently delayed the march of the enemy to Spottsylvania Court House to enable our infantry to reach that point first, and the battles fought there would have probably occurred elsewhere,

but upon the arrival of General MEADE at Todd's Tavern the orders were changed, and GREGG was simply directed by him to hold Corbin's bridge, and MERRITT's division ordered in front of the infantry column, marching on the road to Spottsylvania in the darkness of the night, the cavalry and infantry becoming entangled in the advance, causing much confusion and delay.

I was not duly advised of these changes, and for a time had fears for the safety of General WILSON's command, which had proceeded, in accordance with my instructions, to Spottsylvania Court House, capturing and holding it until driven out by the advance of LONGSTREET's corps.

The time had now come to leave the Wilderness, where we had successfully held the left of the army, and defeated the enemy's cavalry on the 5th at Todd's Tavern, and at the Furnaces; again on the 6th at the Furnaces, and on the 7th at Todd's Tavern. During the 8th I received orders to go out and engage the Rebel cavalry, and when out of forage, *of which we had half rations for one day*, I was to proceed to the James river, and replenish from the stores which General BUTLER had at Bermuda Hundred.

RAID AROUND RICHMOND.

Pursuant to this order the three divisions of cavalry, on the evening of this day, were concentrated in the vicinity of Aldrich's, on the plank road to Fredericksburg, and on the morning of the 9th commenced the march. It will be seen upon examination of the map of Virginia, that there was but very little space for a large cavalry force to operate on the left of our army, from Spottsylvania to the Rappahannock, and that we were liable to be shut in. I therefore concluded to march around the right of LEE's army, and put my command, before fighting, south of the North Anna, where I expected to procure grain, which I was confident that while engaging the enemy's cavalry no timely assistance from his infantry could be procured, and whence, if not successful, I could proceed west and rejoin our army, swinging around towards Gordonsville and Orange Court House.

With this view we started, marching out on the plank road to Tabernacle Church, thence to the Telegraph road, thence down through Childsburg to Anderson's crossing of the North Anna. This movement was made at a walk, with three divisions on the same road — making a column of about thirteen miles in length — marching by the flank of the enemy; I preferred this, however, to the combinations arising from separate roads, combinations rarely working as expected, and generally failing, unless subordinate commanders are prompt and fully understand the situation; besides, an engagement was imminent, and it was necessary that the force be well together.

As soon as the Nye, Po and Ta rivers, each giving an excellent defensive line to the enemy, were passed, all cause for anxiety was removed, and our ability to cross the North Anna unquestionable.

After passing the Ta river the enemy's cavalry came against the rear of my column, and General DAVIES, who had the rear brigade, was directed to fight as rear guard, following up the main column; it is with pleasure I say that he and his command performed this responsible and trying duty with courage and good judgment. About dark MERRITT crossed the North Anna at Anderson's ford; GREGG and WILSON encamped on the north side, engaging the enemy up to a late hour at night. After MERRITT's division crossed CUSTER's brigade was ordered to Beaver Dam Station, on the Virginia Central railroad, where he captured 75 Union prisoners, taken by the enemy in the Wilderness; destroyed the station, two locomotives, three trains (100) cars, ninety (90) wagons, from eight to ten miles telegraph wire and railroad, 200,000 pounds of bacon, and other supplies, amounting in all to about one and a half million of rations, and nearly all the medical stores of General LEE's army. These stores had been moved from Orange Court House to this point, either because General LEE wished to have them directly in his rear — the road used for hauling from Orange Court House to Spottsylvania being on a parallel line to his line of battle — or because he contemplated falling back, or being driven back, to the North Anna.

On the morning of the 10th GREGG and WILSON were again attacked, but their crossing was covered by the division on the south side of the North Anna, and was effected without much loss.

An important point of the expedition had now been gained, and we had also obtained forage for our almost famished animals; our next object was to husband their strength and prepare to fight.

It now became apparent that the enemy, in following up our rear, had made a great mistake, and he began to see it, for, when we leisurely took the Negrofoot road to Richmond, a doubt arose in his mind as to whether his tactics were good, whereat he immediately hauled off from the rear, and urged his horses to the death so as to get in between Richmond and our column.

This he effected, concentrating at Yellow Tavern, six miles from the city on the Brook turnpike; consequently the march on the 10th was without much incident, and we quietly encamped on the south bank of the South Anna, where we procured all necessary forage, marching from fifteen to eighteen miles.

On the night of the 10th and 11th of May, DAVIES' brigade of GREGG's division was ordered to Ashland, and arriving before the head of the enemy's column, which had to make a wide detour to reach Yellow Tavern, drove out a force occupying the town; burnt a locomotive with train of cars attached; destroyed the railroad for some distance, and rejoined the main column at Allen's station, on the Fredericksburg railroad.

From Allen's the entire command moved on Yellow Tavern, MERRITT in advance, WILSON next, and GREGG in rear. The enemy here again made an error in tactics by sending a large force to attack my rear, thus weakening his force in front, enabling me to throw all my strength on that which opposed my front, and fight this force with a small rear guard.

MERRITT gallantly attacked the enemy at Yellow Tavern, and got possession of the Brook turnpike. The enemy, still confident, formed his line a few hundred yards to the east of this pike, enfilading it with his artillery fire, and making Yellow Tavern a hot place; but GIBBS and DEVIN held fast with their brigades, supported by artillery, and CUSTER charged the enemy's battery and line, supported by CHAPMAN's brigade of WILSON's division — in fact, by the whole of WILSON's division, GREGG having one brigade available to support.

CUSTER's charge, with CHAPMAN on his flank, was brilliantly executed: first at a walk; then at a trot; then dashing at the enemy's line and battery, capturing the guns and gunners and breaking the line, which was simple enough to receive the charge in a stationary position.

In this assault General J. E. B. STUART, commanding the enemy's cavalry, was mortally wounded.

GREGG about the same time charged the force in rear with equal success, and ended the engagement. We captured a number of prisoners, and the casualties on both sides were quite severe. After CUSTER's charge and the enemy's line was broken — one portion of which was driven towards Ashland, the other towards Richmond — a reconnoissance was sent up the Brook turnpike, towards the city, dashed across the south fork of the Chickahominy, drove a small force from the exterior line of the works, and went inside of them.

I followed up this party, and found between the two lines of works a road leading to that from Mechanicsville to Richmond. I thought we could go around on this across the Mechanicsville pike, south of the Chickahominy, and encamp next night (12th) at Fair Oaks, and determined to make the movement, being influenced to some extent in doing so by the reports from colored people, during the afternoon, that General BUTLER's force had reached a small stream about four miles south of Richmond, on the south side, and that I possibly could help him by a demonstration. Therefore, after making the wounded as comfortable as possible, we commenced the march about 11 o'clock on the the night of the 11th, and massed the command on the plateau, south of Meadow Bridge, at about daylight; torpedoes planted in the road — many of which exploded, killing several horses — being the only difficulty encountered.

At daylight on the morning of the 12th WILSON encountered the enemy's batteries on, or near, the Mechanicsville pike, and could not pass them. As soon as I was notified of this condition, CUSTER's brigade was ordered to make the crossing to the north side of the Chickahominy at Meadow Bridge, but as the bridge was found to have been destroyed, and the enemy's cavalry posted on the north side, I ordered MERRITT's entire division to repair it, and to make the crossing at all hazards.

During the time thus occupied, the enemy gave the working party great annoyance by sweeping the bridge with a section of artillery; and MERRITT, to drive away this section and the force supporting it, crossed a small force of two or three regiments, attacked dismounted, and was repulsed; still the work on the bridge continued, and when it was finished, MERRITT crossed nearly all his division, dismounted, attacked the enemy, carried his line of temporary breastworks, and continued the pursuit to Gaines' Mill. Meantime the enemy advanced from behind his works at Richmond, and attacked WILSON and GREGG. WILSON was driven back in some confusion, but GREGG was ready, having concealed a heavy line of skirmishers in a bushy ravine in his front, and when the enemy marched to attack, with more display than grit, this unexpected and concealed line opened a destructive fire with repeating carbines, and some of WILSON's men at the same time turning in on their flank, the line broke in disorder, and went into security behind the breastworks defending the city. The six batteries of regular artillery were used by Captain ROBINSON, chief of artillery, with great effect, and contributed much to our success

The enemy considered us completely cornered, but such was not the case, for while we were engaged, scouting parties were sent along the Chickahominy, and several fords found by them.

This attack and repulse ended the battle; for the balance of the day we collected our wounded, buried our dead, grazed our horses, and read the Richmond papers, two small newsboys having, with commendable enterprise, entered our lines and sold to the officers and men.

Between 3 and 4 o'clock in the afternoon the remaining portion of the command crossed the Chickahominy, at and between Walnut Grove and Gaines' Mills.

On the 13th the march was resumed, encamping at Bottom's Bridge; on the 14th we marched through White Oak Swamp, and went into camp between Haxall's Landing and Shirley, on the James river.

Our casualties on the march were 425.

All transportable wounded and a large number of prisoners were brought along to this point, and the former, through the kindness of General BUTLER'S medical officers, quickly cared for on arrival.

From the 14th until the 17th, we rested in this camp, sending out scouting parties as far as New Market, in the direction of Richmond.

On the night of the 17th we commenced the return march, crossing the Chickahominy at Jones' Bridge, and went into camp, on the 18th, at Baltimore Crossroads and vicinity.

The uncertainty of what had happened to the Army of the Potomac during our absence, made the problem of how to get back and where to find it somewhat difficult, particularly so as I knew that reënforcements had come up from the South to Richmond; I therefore determined to cross the Pamunkey River at the White House, and sent to Fortress Monroe for a pontoon bridge to be used for that purpose.

While waiting, I ordered CUSTER with his brigade to proceed to Hanover Court House, and, if possible, destroy the railroad bridges over the South Anna; GREGG and WILSON were sent at the same time to Cold Harbor, to demonstrate in the direction of Richmond as far as Mechanicsville, so as to cover CUSTER'S movement; MERRITT, with the remaining brigades of his division, held fast at Baltimore Crossroads.

After GREGG and CUSTER started it was found on examination that the railroad bridge at the White House had been but partially burned, and could be repaired, and General MERRITT was at once put on this duty. By sending mounted parties through the surrounding country, each man bringing back a board, it was made passable in one day, and on the 22d, when CUSTER and GREGG returned, we crossed, encamping that night at Aylett's, on the Mattapony river.

CUSTER encountered a large force of the enemy apparently moving from the direction of Richmond to LEE'S army, and was unable to accomplish his mission.

GREGG occupied Cold Harbor and sent scouting parties, which encountered small squads of mounted men, to the vicinity of Mechanicsville, but nothing of great importance occurred.

At Aylett's we learned from citizens, and captives belonging to LEE'S army, that the Army of the Potomac was at North Anna river, in the vicinity of Chesterfield Station.

On the 23d the march was resumed, encamping at Reedy Swamp.

On the 24th we rejoined the Army of the Potomac in the vicinity of Chesterfield.

This ended the first raid, which occupied sixteen days.

We lost but few horses, considering their condition when we started. The average distance traveled per day did not exceed eighteen miles; the longest march being thirty miles.

The horses which failed were shot by the rear-guard, as they could have been easily recuperated and made serviceable to the enemy. I think the actual number lost would not exceed 300, perhaps not more than 250.

COVERING THE ARMY OF THE POTOMAC'S CROSSING OF THE PAMUNKEY.

On the 25th General WILSON with his division was transferred to the right of the army, and made a reconnoissance south of the North Anna as far as Little river; the other two divisions remained encamped from the 24th until the 26th in the vicinity of Polecat Station.

On the 26th a movement of the army commenced in order to make the crossing of the Pamunkey river at or near Hanovertown. TORBERT'S and GREGG'S divisions, with RUSSELL'S division of the 6th Corps, took the advance to secure the crossings, with directions to demonstrate so as to deceive the enemy as much as possible in the movement.

To accomplish this end, TORBERT was ordered to move to Taylor's Ford on the Pamunkey, and demonstrate until after dark as if the crossing was to be made at that point, then to leave a small guard, quietly withdraw, and march to Hanovertown ford, where the real crossing was to be made. GREGG was ordered to Littlepage's Crossing on the Pamunkey to

demonstrate in the same manner, to retire quietly after dark, leaving a guard to keep up the demonstration, and march quickly to Hanovertown Crossing, taking with him the pontoon bridge.

RUSSELL took up the march and followed the cavalry.

On the morning of the 27th CUSTER'S brigade of TORBERT'S division made the crossing, driving from it about one hundred of the enemy's cavalry, and capturing thirty or forty; the balance of the division followed this brigade, and advanced to Hanovertown, where General GORDON'S brigade of Rebel cavalry was encountered, routed, and driven in great confusion in the direction of Hanover Court House, the pursuit being continued to a little stream called Crump's Creek.

GREGG was moved up to this line, and RUSSELL encamped near the crossing of the river.

We had been successful in our mission, and, upon the arrival of the army, on the 28th, it crossed the Pamunkey behind our line, unimpeded.

ENGAGEMENT AT HAWE'S SHOP.

I was immediately after ordered to demonstrate in the direction of Mechanicsville in order to find out the enemy's whereabouts, and therefore directed GREGG'S division to move out, via Hawe's Shop, on the Mechanicsville road, but when about three-fourths of a mile in advance of Hawe's shop it encountered the enemy's cavalry, which was dismounted and behind a temporary breastwork of rails, etc. GREGG vigorously attacked this force, which appeared to be the Rebel cavalry corps, and a brigade of South Carolina troops, reported 4,000 strong, armed with long-range rifles, and commanded by a Colonel BUTLER; these Carolinians fought very gallantly in this their first fight, judging from the number of their dead and wounded, and prisoners captured. The most determined efforts were made on both sides in this unequal contest, and neither would give way until late in the evening, when CUSTER'S Michigan brigade was dismounted, formed in close column of attack, and charged, with GREGG'S division, when the enemy was driven back, leaving all his dead, and his line of temporary works in our possession.

This was a hard-contested engagement, with heavy loss, for the number of troops engaged, to both sides, and was fought almost immediately in front of the infantry line of our army, which was busily occupied throwing up breast works. After dark, our own and the enemy's dead being buried, we moved to the rear of the infantry, and went into camp on the morning of the next day—the 29th—in the vicinity of Old Church.

In the battle of Hawe's Shop but one brigade (CUSTER'S) of TORBERT'S division was engaged; the other two, being posted on the Crump Creek line, could not be gotten up until relieved by the 6th Corps. They arrived in the afternoon, however, but did not become seriously engaged, only demonstrating on the right of GREGG.

OLD CHURCH.

After we had taken position at Old Church, WILSON'S division was ordered to the right of the army, and GREGG'S and TORBERT'S pickets pushed out in the direction of Cold Harbor, which was occupied by the enemy in some force. As our occupation of this point was essential to secure our lines to the White House, which was to be our base, its possession became a matter of deep interest. The enemy appeared to realize this also, for he, at a very early period, took possession of it, and pushed a force up to Matadequin creek on the Old Church road, putting his front parallel with the Pamunkey — which was then our line to the White House, in order to make it dangerous for our trains.

This force encountered the pickets of the first division at Matadequin creek, but they held fast and fought gallantly until re-enforced by their division on the north side of the creek, which took up the contest. The fight then became general and was stubbornly contested, but the enemy finally gave way, and was pursued within one and a half mile of Cold Harbor. In this fight BUTLER'S South Carolinians were again put in to receive the brunt, and many of them were killed and captured.

COLD HARBOR.

On the morning of the 31st I visited TORBERT and CUSTER, at CUSTER'S headquarters—TORBERT'S division having the advance—and found that they had already talked over a plan to attack and capture Cold Harbor, which I indorsed, and on the afternoon of the 31st the attack was made, and after a hard fought battle the town was taken. GREGG was immediately moved to the support of TORBERT, but the place was captured before any of his troops became engaged.

Cold Harbor was defended by cavalry and infantry, and on the Old Church side the enemy had thrown up temporary breastworks of logs and rails. The fight on the part of our officers

and men was very gallant: they were now beginning to accept nothing less than victory. After gaining the town I notified army headquarters to that effect, but that the enemy in additional numbers were arriving there; that I could not hold it with safety to my command, and that I would move out, and did so. Just after we had left, however, a despatch was received directing that Cold Harbor be held at all hazards, and I therefore immediately ordered its re-occupation, changed the temporary breastworks thrown up by the enemy, so as to make them available for our troops, dismounted the cavalry, placing them behind these works, and distributing the ammunition in boxes along the line, determined to hold the place as directed.

While this was being done the enemy could be heard giving commands and making preparations to attack in the morning.

Just after daylight, June 1st, he marched to the attack, and was permitted to come close in to our little works, when he received the fire of our batteries and repeating carbines, which were used with terrible effect, and was driven back in confusion. Still determined to get the place, after reorganizing, he attacked again, but with the same result.

About 10 o'clock the 6th Corps arrived, and relieved the cavalry, which moved towards the Chickahominy and covered the left of the line until relieved by HANCOCK'S corps during the afternoon.

While the balance of the cavalry were engaged at Cold Harbor WILSON'S division was posted on the right of the army, near the headwaters of the Tolopotomy creek.

On being relieved by the infantry from the Cold Harbor line the two divisions moved down the Chickahominy, encamping for the night of the 1st of June at Prospect Church and vicinity, and on the 2d we moved down the Chickahominy still further, taking a position on the north side, at Bottom's Bridge; the enemy's cavalry occupying the south side, with artillery in position at the fords.

No movements took place on the 3d: the enemy shelled our position at very long range but did no damage.

On the 4th the 1st Division marched back to Old Church, and on the 5th the 2d Division was relieved at Bottom's bridge by one brigade of WILSON'S division, and marched back to the same vicinity; thence both divisions moved to New Castle Ferry, where the trains which had been sent to the White House reached us, with supplies for a march, since called the TREVILLIAN Raid.

While GREGG'S and TORBERT'S divisions were operating on the left of the army, WILSON, who was on the right engaged the enemy at Mechump's Creek on the 31st of May; at Ashland on the 1st of June, and on the 2d of June at Hawe's Shop—the scene of the battle of May 28th—and at Tolopotomy Creek. The battle at Ashland was brought about by MCINTOSH'S brigade, which had been ordered to that vicinity for the purpose of covering a movement made to the South Anna to destroy the railroad bridges over that stream, and which was successful.

On the 6th of June I received instructions from General MEADE and the Lieutenant General to proceed with two divisions of my corps to Charlottesville, for the purpose of cutting the Virginia Central railroad, to unite if possible with Major General D. HUNTER, whom I expected to meet at or near Charlottesville, and bring his command over to the Army of the Potomac.

COVERING THE ARMY OF THE POTOMAC'S CROSSING OF THE JAMES RIVER.

There also appeared to be another object, viz: to remove the enemy's cavalry from the south side of the Chickahominy, as, in case we attempted to cross to the James River, this large cavalry force could make such resistance at the difficult crossings as to give the enemy time to transfer his force to oppose the movement. Two divisions being ordered to proceed on this raid, WILSON was detached by the following order, and took the advance of the Army of the Potomac on its march to the James river:

HEADQUARTERS CAVALRY CORPS, ARMY OF POTOMAC,
NEWCASTLE FERRY, June 6, 1864.

GENERAL:—I am directed by the Major General Commanding to notify you that he will march from Newcastle Ferry at 5 A. M. to morrow, taking with him the 1st and 2d Cavalry Divisions. During his absence you will report and receive your orders direct from Headquarters Army of the Potomac.

Your Division Quartermaster and Commissary will have to attend to the supplying of your command.

Orders have been issued directing the officers in charge at the White House to send all detachments of cavalry (mounted) belonging to the different cavalry divisions to report temporarily for duty with your command.

Very respectfully, your obedient servant,

JAS. W. FORSYTH,
Lieutenant Colonel, Chief of Staff.

Brig'r Gen'l T. H. Wilson, Commanding 3d Cavalry Division.

TREVILLIAN RAID.

On June 7th the command being prepared with three (3) days' rations in haversacks, to last for five days, two days' forage on the pommel of the saddles, one hundred rounds of ammunition, forty on the person and sixty in wagons, one medical wagon, eight ambulances and one wagon each for division and brigade headquarters, we crossed the Pamunkey, at New Castle, and encamped that night between Aylett's and Dunkirk, on the Mattapony river.

On the 8th we encamped two miles west of Polecat station.

It was my intention to march along the north bank of the North Anna, cross it at Carpenter's Ford, strike the railroad at Trevillian Station and destroy it to Louisa Court House, march past Gordonsville, strike the railroad again at Cobham's station, and destroy it thence to Charlottesville as we proceeded.

We, therefore, on the 9th of June, resumed the march along the Anna—our advance guard, skirmishing, as it always did, with mounted men of the enemy and encamped on Eastnortheast Creek, near Young's Mills.

During this day I learned that BRECKINRIDGE'S division of infantry was passing slowly up the railroad to Gordonsville, parallel to me, and that the enemy's cavalry had left their position on the south side of the Chickahominy and were marching on the old Richmond and Gordonsville road on Gordonsville. This information was confirmed by a party sent to cut the telegraph wires along the railroad during the night. On the 10th the march was resumed; we passed through Twyman's store, crossed the North Anna at Carpenter's Ford and encamped on the road leading to Trevillian station and along the banks of the North Anna.

During the night of the 10th the boldness of the enemy's scouting parties, which we had encountered more or less every day, indicated the presence of a large force.

On the morning of the 11th we resumed the march on Trevillian, meeting at once and driving the enemy's advance parties in our front. TORBERT had the leading division and at a point about three or three and a half miles from Trevillian station, encountered the enemy in full force behind a line of breastworks constructed in dense timber. CUSTER with his brigade was ordered to take a wood road found on our left and get to Trevillian station, or at least in rear of the enemy and attack his led horses. In following this road he passed between FITZ LEE'S and HAMPTON'S divisions—the former being on the road leading from Louisa Court House to where the battle commenced, the latter on the direct road from Trevillian to the same point—and I on, without opposition, to Trevillian station, which he took possession of.

As soon as I found that CUSTER had gotten to the rear of the enemy, the remaining two brigades of TORBERT'S division were dismounted and formed line of battle, assailed the enemy's works and carried them, driving HAMPTON'S division pell-mell and at a run back on CUSTER at Trevillian, who commenced fighting in all directions. So panic-stricken was this division HAMPTON'S and so rapidly was it pushed that some of it was driven through CUSTER'S lines, and many captured.

While the 1st Division was thus engaged GREGG attacked FITZ LEE on the Louisa Court House road and drove him in the direction of Louisa Court House; the pursuit was continued until about dark.

HAMPTON'S division made its way in the direction of Gordonsville and was joined during the night by FITZ LEE, who made a detour westward for that purpose.

At night my command encamped at Trevillian station, and from prisoners, of which we had captured about 400, I learned that HUNTER, instead of coming towards Charlottesville, as I had reason to suppose, was at or near Lexington, moving apparently on Lynchburg; that EWELL'S corps was on its way to Lynchburg, on the south side of James river, and that BRECKINRIDGE was at Gordonsville or Charlottesville, having passed up the railroad as heretofore alluded to. I therefore made up my mind that it was best to give up the attempt to join HUNTER, as he was going from me instead of coming towards me, and concluded to return.

Directions were at once given to collect our own wounded and those of the enemy in hospitals, and to make provisions for their transportation back in ammunition wagons and in vehicles collected from the country. I was still further influenced in my decision to return by the burden which these wounded threw upon me, there being over 300 cases of our own, and the additional burden of about 400 prisoners, all of whom must have been abandoned by me in case I proceeded further; besides one more engagement would have reduced the supply of ammunition to a very small compass.

On the morning of June 12th we commenced destroying the railroad to Louisa Court House, and in the afternoon I directed TORBERT to make a reconnoissance up the Gordonsville road to secure a by road leading over Malbors's ford, on the North Anna, to the Catharpin road, as I proposed taking that route in returning, and proceeding to Spottsylvania Court House, thence via Bowling Green and Dunkirk, to the White House.

In the reconnoissance TORBERT became heavily engaged, first one brigade, then another, then the last, the battle continuing until after dark. GREGG, during this time, was breaking up the railroad to Louisa Court House.

The result of TORBERT's fighting made it impossible to cross at Mallory's Ford without venturing a battle the next day, in which case the remainder of our ammunition would have been consumed, leaving none to get back with; therefore, during the night of the 12th, we moved back on our track, recrossed the North Anna at Carpenter's Ford on the following morning, unsaddled our horses and turned them out to graze, as they were nearly famished, having had no food for two days, and in the afternoon proceeded to the vicinity of Twyman's Store, where we encamped.

The enemy, excepting a small party which General DAVIES dispersed with one of his regiments, did not follow us.

I left near Trevillian three hospitals containing many Rebel wounded, and ninety of ours that were non-transportable, with medicines, liquors, some hard bread, coffee, and sugar; I regret to say that the surgeons left in charge were not well treated by the enemy, and that the hospitals were robbed of liquors and stores.

On the 14th the march was continued, and we reached the Catharpin road — upon which it was originally intended to move after crossing Mallory's Ford, and which would have saved much time and distance — and encamped at Shady Grove Church.

On the 15th we encamped at Edge Hill, on the Ta River, having passed over the battle-field of Spottsylvania; and on the 16th at Dr. Butler's Farm on the Mattapony, having marched through Bowling Green.

Being as yet unable to ascertain the position of the Army of the Potomac, and uncertain whether or not the base at the White House had been discontinued, I did not like to venture between the Mattapony and Pamunkey rivers, embarrassed as I was with wounded, prisoners, and about 2,000 negroes that had joined us, and therefore determined to push down the south bank of the Mattapony far enough to enable me to send them with safety to West Point, where I expected to find gunboats and transports.

Following this plan we proceeded on the 17th to Walkerton and encamped; and on the 18th resumed the march through King and Queen Court House, encamping in its vicinity.

I here learned that the base at the White House was not entirely broken up, and that supplies there awaited me; therefore, on the morning of the 19th, I sent the wounded, prisoners, and negroes to West Point, escorted by two regiments of cavalry, and turning, marched to Dunkirk on the Mattapony, a point at which the river was narrow enough for my pontoons to reach across.

On my march from Trevillian to this point, we halted at intervals during each day to dress the wounded, and refresh them as much as possible. Nothing could exceed the cheerfulness exhibited by them; hauled as they were in old buggies, carts, ammunition wagons, etc., no word of complaint was heard.

I saw on the line of march men with wounded legs driving, while those with one disabled arm were using the other to whip up the animals.

On the 20th we resumed the march at an early hour, to the sound of artillery, in the direction of the White House, and had proceeded but a short distance when despatches from General ABERCROMBIE notified me that the place was attacked. I had previously sent an advance party with directions to move swiftly, and to report to me by couriers the condition of affairs; from these I soon learned that there was no occasion to push our jaded animals, as the crisis, if there had been one, was over, and therefore moved leisurely to the banks of the Pamunkey opposite White House, and encamped, the enemy holding the bluffs surrounding the White House Farm.

On the morning of the 21st, GREGG's division was crossed over dismounted, and TORBERT's division mounted, and the enemy driven from the bluffs, and also from Tunstall's Station in the evening, after a sharp engagement.

I found here orders to break up the White House depot, and to move the trains over to Petersburg, via Jones's bridge.

I immediately commenced breaking up as directed and making my arrangements to carry over and protect a train of over nine hundred wagons, knowing full well that I would be attacked if the enemy had any spirit left in him.

On the morning of the 22d I sent TORBERT in advance to secure Jones's bridge over the Chickahominy, so that we could make the crossing at that point, and GREGG marched on a road parallel to the one on which the train was moving, and on its right flank, as it was the only flank requiring protection.

The train was not attacked, but was safely parked on the south side of the Chickahominy for the night.

On the morning after TORBERT had secured the crossing, the 23d, the enemy attacked his picket post on the Long Bridge road, with CHAMBLISS's brigade, and drove it in, but on its being reenforced by six companies of colored troops belonging to GETTY's command, the enemy was repulsed, and the picket post reestablished. This brigade, I was told by the prisoners taken, was the advance of the rebel cavalry corps, and through it HAMPTON had been advised of our having already secured the crossing of the Chickahominy.

General GETTY had relieved General ABERCROMBIE, and was in command of a small infantry force, composed mostly of the odds and ends of regiments and batteries.

On the 24th the march was resumed, with directions to cross the trains at Bermuda Hundred, where there was a pontoon bridge; to reach this point I was obliged to march through Charles City Court House, thence by Harrison's Landing and Malvern Hill, the latter of which was occupied by the enemy; in fact, he held everything north of the James, except the *tête de pont* at the crossing.

TORBERT's division marched out on the Charles City Court House road as an escort to the trains, and when in the vicinity of the Court House, the advance guard encountered the enemy and drove him across Herring Creek, on the road to Westover Church. As soon as this attack was reported to me, orders were immediately given to park the train — the head of which was far beyond Charles City Court House — at convenient points on the road, and our TORBERT was directed to push his whole division to the front to meet the enemy, while GREGG, who had marched on the road leading to St. Mary's Church for the purpose of protecting the right flank of the train, and who had also been attacked, was instructed to hold fast until all the transportation could pass Charles City Court House. The train was immediately after put in motion, and safely parked in the vicinity of Wilcox's Landing.

At St. Mary's Church GREGG was attacked by the entire cavalry corps of the enemy, and after a stubborn fight, which lasted until after dark, was forced to retire in some confusion, but without any loss in material.

This very creditable engagement saved the train, which should never have been left for the cavalry to escort.

During the night and next morning, the train was moved back through Charles City Court House, to Douthard's Landing on the James River, where it was ferried over, after which the troops were transported in the same manner.

REAM'S STATION

Before the crossing was completed, General MEADE notified me to move rapidly to the support of General WILSON, who had been ordered on a raid to break the communication south of Petersburg by destroying the Southside and Danville railroads.

General WILSON's expedition had been successful until it reached the left of the army on its return, when it encountered, at Ream's Station, a large force of infantry sent down the Weldon railroad from Petersburg, and being at the same time attacked on the flank by cavalry, the command was routed, and obliged to fall back across Nottoway River at Poplar Hill, whence a wide detour was necessary to reach the main army, in consequence of which, as the heat was intense, the loss in animals was great.

As soon as the orders from General MEADE were received, I hastened with TORBERT and GREGG, via Prince George Court House and Lee's Mills, to Ream's Station — where I found the 6th Corps — but was too late to render material assistance; I immediately, however, sent out parties to procure information concerning the expedition, and learned from them that it had crossed the Nottoway and was safe.

The results obtained in the destruction of the Southside and Danville railroads were considered equivalent to the losses sustained by General WILSON's division. Had an infantry force been sent sooner to Ream's Station, the raid would have been eminently successful.

General WILSON states in his report as follows:

"Foreseeing the probability of having to return northward, I wrote to General MEADE the evening before starting, that I anticipated no serious difficulty in executing his orders; but unless General SHERIDAN was required to keep HAMPTON's cavalry engaged, and our infantry to prevent LEE from making detachments, we should probably experience great difficulty in rejoining the army. In reply to this note, General HUMPHREYS' chief of staff informed me that it was intended the Army of the Potomac should cover the Weldon road the next day, the Southside road the day after, and that HAMPTON having followed SHERIDAN towards Gordonsville, I need not fear any trouble from him.' Still no timely relief was sent.

As soon as WILSON was found to be safe, I was ordered back to Light House Point and vicinity to rest my command, which had marched and fought for fifty-six consecutive days, and remained there from the 2d till the 24th of July, refitting and picketing the left of the army.

While at this camp I received about 1,500 horses. These, together with about 400 obtained at Old Church by dismounting recruits, were all that were issued to me while personally in command of the cavalry corps from April 6 to August 1, 1864.

On the afternoon of July 26, I moved with the First and Second divisions of Cavalry, TORBERT's and GREGG's for the north side of the James River, in connection with the 2d Corps, and was directed, if an opportunity offered, to make a raid on the Virginia Central railroad and destroy the bridges over the North and South Anna Rivers and those over Little River.

DARBYTOWN.

We crossed the Appomattox at Broadway Landing, and on arriving at Deep Bottom, where we were joined by General KAUTZ's small cavalry division of the Army of the James, the command was massed to allow the 2d Corps to pass and to take the advance across the James.

Soon after the corps had crossed a small portion of it carried the enemy's works in front of the *tête de pont*, and captured four pieces of artillery.

The cavalry moved to the right of the 2d Corps and found the enemy occupying a strong line of works extending across the New Market and Central roads leading to Richmond, the right resting on Four-mile Creek.

His cavalry videttes posted in front of Ruffin's house on the New Market road were discovered by the 2d United States Cavalry, and driven back on their infantry line of battle, composed of two divisions. The high ground in advance of Ruffin's house thus gained was immediately occupied by the first division as a line of battle, and the second division placed on its right, covering the road from Malvern Hill to Richmond.

Immediately upon the formation of our line, the enemy advanced to the attack and drove the cavalry back over the ridge, on the face of which it quickly lay down in line of battle at a distance of about fifteen yards from the crest. When the enemy's line reached this crest, a fire from our repeating carbines was opened upon it, whereupon it gave way in disorder, and was followed over the plain beyond by the cavalry, which captured about 250 prisoners and two battle flags, besides killing and wounding very many.

This counter attack against infantry was made by the 1st and 2d Cavalry Divisions simultaneously, and our line re-established. During the engagement, which is called the battle of Darbytown, General KAUTZ was in support of GREGG on the right of the line.

The enemy, deceived by the long front presented by the 2d Corps and cavalry, was undoubtedly impressed with the idea that nearly all of our forces had been moved to the north side of the James, and at once transferred a large body of his troops from the lines at Petersburg to our front at Newmarket; as I understood, this transfer by the enemy was the object which the Lieutenant-General wished to attain, in order that the mine explosion of Petersburg might, to a greater certainty, result in the capture of the city.

On the afternoon of the 28th the 2d Corps withdrew to a line near the head of the bridge, and the cavalry was drawn back to a position on its right. In order to deceive the enemy still more, I sent during the night one of my divisions to the opposite side of the James, first covering the bridge with moss and grass to prevent the tramp of the horses being heard, and at daylight marched it back again on foot in full view of the enemy, creating the impression that a large and continuous movement to the north side was still going on.

On the 29th nothing occurred during the day on either side, except a skirmish by some of General KAUTZ's command, in the vicinity of Malvern Hill; but, after dark, the 2d Corps was hastily and quietly withdrawn to the south side, to take part in the engagement which was expected to follow the mine explosion. I was directed to follow, and withdrew by brigades from my right, successively passing them over the bridge. This movement was one involving great anxiety, as, when the 2d Corps moved, the space at the mouth of the bridge occupied by me was so circumscribed that an offensive movement in force by the enemy must have resulted in the annihilation of my whole command.

Shortly after daylight on the 30th the recrossing had been effected, and by 10 o'clock my advance division was well over to the left of our army in front of Petersburg; but as the mine attack had failed, it was not necessary to carry out the part assigned to the cavalry.

The movement to the north side of the James for the accomplishment of our part of the plan connected with the mine explosion was well executed, and every point made; but it was attended with such anxiety and sleeplessness as to prostrate almost every officer and man in the command.

On the 1st of August I was relieved from the personal command of the cavalry corps, and ordered to the valley of the Shenandoah. TORBERT's and WILSON's divisions were directed to join me there.

It will be seen by the foregoing narrative that the idea advanced by me at the commencement of the campaign, viz. "*that our cavalry ought to fight the enemy's cavalry, and our infantry the enemy's infantry,*" was carried into effect immediately after the battle of the Wilderness.

The result was constant success and the almost total annihilation of the Rebel cavalry. We marched when and where we pleased; were always the attacking party, and always successful.

During the period herein embraced, I am led to believe, on information derived from the most reliable sources, that the enemy's cavalry was superior to ours in numbers; but the *esprit* of our men increased every day, while that of the enemy diminished.

In these marches, and in others afterwards performed in connection with the Valley and Appomattox campaigns, we were obliged to live to a great extent on the country. Forage had to be thus obtained for our horses, and provisions for our men, consequently many hardships were necessarily brought on the people, but no outrages were tolerated.

I do not believe war to be simply that lines should engage each other in battle, as that is but the duello part — a part which would be kept up so long as those who live at home in peace and plenty could find the *best* youth of the country to enlist in their cause. I say the *best*, for the bravest are always the best, and therefore do not regret the system of living on the enemy's country. These men and women did not care how many were killed or maimed, so long as war did not come to their doors, but as soon as it did come in the shape of loss of property, they earnestly prayed for its termination.

As war is punishment, and death the maximum punishment, if we can, by reducing its advocates to poverty, end it quicker, we are on the side of humanity.

In the foregoing brief sketch I have been unable to give in detail the operations of the cavalry, and will have to trust to the subordinate reports to make up the deficiency. In consequence of our constant activity, we were obliged to turn over our wounded and prisoners whenever and wherever opportunity offered, and oftentimes without receipts; I am also, therefore, unable to furnish an accurate list of either my casualties or prisoners captured from the enemy. I think my casualties, from May 4th to August 1st, will number between 5,000 and 6,000 men; and the captures in prisoners will exceed 4,000.

It is stated in the War Department from the 4th of May, 1864, to the 9th of April, 1865, the day on which the Army of Northern Virginia surrendered, 20 battle flags were captured in open field fighting: it is nearly as many as all the armies of the United States, combined, sent there during the Rebellion. The number of field pieces captured in the same period is stated at 252, and it was all in open field fighting.

These captures of flags, colors, and artillery were made during the campaign, the operations of which I have just related: the Shenandoah campaign, the march from Winchester to Petersburg, and the Appomattox campaign.

To the 6th and 19th Corps, General CROOK's command, which, with MERRITT's and CUSTER's divisions of cavalry, composed the Army of the Shenandoah, and to the 5th and 6th Corps, which operated with me on the Appomattox campaign, a proportionate share of these captures belong.

It will be seen by this report that we led the advance of the army to the Wilderness: that on the Richmond Raid we marked out its line of march to the North Anna, where we found it on our return: that we again led its advance to Hanovertown, and thence to Cold Harbor: that we removed the enemy's cavalry from the south side of the Chickahominy by the Trevilian Raid, and thereby materially assisted the army in its successful march to the James River and Petersburg, where it remained until we made the campaign in the Valley; marched back to Petersburg, and again took its advance and led it to victory.

In all the operations the percentage of cavalry casualties was as great as that of the infantry, and the question which had existed," Who ever saw a dead cavalry man?" was set at rest.

To Generals D. MCM. GREGG, TORBERT, WILSON, MERRITT, CUSTER, DEVIN, J. IRWIN GREGG, MCINTOSH, CHAPMAN, DAVIES, and GIBBS, to the gallant officers and men of their commands, and to the officers of my staff, I return my sincere thanks.

I am, general, very respectfully, your obedient servant.

P. H. SHERIDAN,
Major General United States Army.

Brevet Major General JOHN A. RAWLINS,
Chief of Staff, Headquarters Armies of the United States, Washington, D. C.

General SHERIDAN's report of subsequent operations will be published in the next number of the JOURNAL.

DISCUSSIONS.

DISCUSSION ON LIEUT. SCHENCK'S PAPER.

General MERRITT: — I cannot with the time at my disposal for the study of the subject, undertake to enter into the discussion of the question contemplated by Lieutenant SCHENCK'S paper, the reading of which I have listened to with great interest. This discussion should be made by artillery officers. Of one thing I can assure the members of this Association, and that is, that the battery commanders during the war of the rebellion, such as GRAHAM, WILLESTON, WOODRUFF and TAYLOR, whatever difficulties they may have encountered, never failed to keep pace with the cavalry in the longest and most rapid marches, and always found the cavalry willing to lend a helping hand in tight places. These batteries were equipped with the Napoleon guns, so called, and the three inch rifles. Their commanders were justly proud of the service with the cavalry, and the cavalry seemed to feel special proprietary rights as to the batteries. It was a most encouraging and commendable state of affairs, and honorable to all.

Captain WHIPPLE: — The writer of the article on "A Horse Artillery Gun," seems to have made a paper which I read before the Association an excuse for his own.

Though it was entitled "The New Field Artillery Gun and Carriage," he assumes (probably for the sake of argument), that the piece is advanced as a typical gun and carriage for horse artillery service, and that there was no intention on the part of the Ordnance Department of supplying any other.

I think it was thoroughly understood, when I was asked to prepare and read my paper, that I was to describe simply a light field gun with which I was known to be familiar. As it was the lightest modern field gun in the service, it was necessarily liable to be used as a horse artillery gun, and to that extent it was so referred to in my paper: *but it was nowhere* stated that a more suitable gun for this service was not recognized as necessary, or would not be supplied by the Ordnance Department when funds for that purpose were available.

Lieutenant SCHENCK objects that in my paper the weight of the element, either gun or caisson, does not appear and is left to conjecture: and then proceeds to supply my deficiencies and to give my authority for the statement that "the weight of the gun is such as to permit of its use for horse artillery purposes," by quoting the weights of a limber and caisson which were not those referred to by me and which I purposely omitted.

The limbers and caissons, the weights of which he uses in his calculations, were experimental and made some years ago from plans proposed by the Board of Light Artillery officers. Those referred to by me are of much later design and, though I do not know the weights, others besides Lieutenant SCHENCK appreciate the importance of mobility in field material, and I have no doubt the experienced officers charged with their construction have very considerably lightened them.

Besides general denunciation of the entire system, Lieutentant SCHENCK emphasizes certain features in the gun and carriage as peculiarly ojectionable.

He questions the selection of the French instead of the wedge fermeture and claims that by far the larger number of artillery officers favor the latter. In this opinion I simply differ with him.

He utterly condemns the brake, stating that no reasonable wheel could stand the strain produced by it. I have seen hundreds of rounds fired when the brake was applied to wheels, some of which were imperfect, and I have never known a wheel to show, in consequence, the least sign of fatigue.

He claims that when the brake is used on the march the piece must be halted before it can be removed: but he will find a statement to the contrary in the last official description of the carriage, *though, of course, only with reference to its use in the light battery.*

He objects, and as strongly to the method of strengthening and stiffening the axle by the use of boiler-plate instead of "tying the ends of the axle to the trail," as is the foreign practice, and forgets or ignores the fact that the first two modern carriages made in this country were so constructed and were utter failures.

His proposition to reduce the number of spare wheels seems reasonable and I entirely agree with him.

The table which he presents, showing loads per horse for horse artillery, *makes the gun* and carriage I described weight 21 pounds per horse less than the Russian gun; 52 pounds per horse less than the English gun; and 56 pounds per horse less than the German gun, though the weight of the limber he has used is probably too great.

His own comparisons alone would seem, therefore, to justify my statement that the weight of the new 3.6-10 inch gun and carriage was such as to permit its use for horse artillery purposes.

Captain MURRAY: — Lieut. SCHENCK'S paper, though entitled "A Horse Artillery Gun," appears in reality to be a very severe *criticism upon* the new No. 3".2 field gun, ostensibly due to Capt. WHIPPLE'S statement that "from its lightness, it, 'the 3".2 gun,' is suitable though not specially designed for horse artillery."

With Lieut. SCHENCK'S *absolute denial of* this statement, I cannot agree: for I am positive that, in years not long passed, most excellent work was done by our horse artillery with a far worse gun.

There can be no question but that the best gun for horse artillery will probably be one specially designed for the service and that, as the principal role of horse artillery is its use with cavalry, it should never under any circumstances prove a drag upon that arm. As stated by Lieut. SCHENCK, the load a horse can draw without over exertion or injury, while marching with cavalry, evidently furnishes a proper "measure of mobility" for horse artillery and in designing a gun for this service, this measure should be constantly kept in view.

According to Lieut. SCHENCK'S table of "Loads per Horse for Horse Artillery," it appears that, omitting the two obsolete guns, the gun which he denies as *absolutely* unsuitable for horse artillery, is third in respect to lightness of load per horse in the list of six given. From this it must be inferred that the weight of the 3".2 gun and its carriage is not the principal objection to it, or if so, then American horses and roads must be very *poor* indeed when compared with even those of Russia. The least load per horse given, obsolete guns excepted, is 570 pounds; yet Lieutenant SCHENCK proceeds to show, by some course of reasoning which I have not undertaken to unravel, that the *maximum load per horse*, in this country, should be 520 pounds. This, according to the table, is 140 pounds less per horse than is required in the German horse artillery and I can hardly believe that the condition of the roads and the nature of the soil of our country *calls for so great a difference*. If Lieutenant SCHENCK is correct in his statement as to what the load per horse should be, then, it appears to me, the designers of all the horse artillery guns he refers to were wrong in their calculations and the horses in all foreign services are greatly overloaded.

To discuss in detail the merits or demerits of Lieutenant SCHENCK'S criticisms, would require more time than is at my disposal. I will therefore simply state that I agree with a few, and disagree with many of his assertions. Among the former may be mentioned: that the weight of the carriage of a horse artillery gun should be a minimum, consistent with strength; that the number of spare wheels carried is too great; and that the weight of all projectiles for the gun should be the same. Among the latter: that horse artillery serving with infantry should be held in reserve until some supreme moment; that the weight of the present carriage for the 3".2 gun is that given; that the "Novelty" brake is so pernicious a device as stated, that it had anything to do with the weight of the new wheel, or that an "ordinary" brake should be substituted therefor; that the stiffening of the axle by boiler plate is so great an evil or so vicious in mechanical principle as contended, or that better results would be obtained by tying the trail to the ends of the axle and thus bringing into play the "terrible" [tensile] strength of the metal; finally that the majority of artillery officers prefer the *wedge* to the *French* formature.

Upon careful consideration of the whole paper, it appears to me as if Lieutenant SCHENCK had made a "mountain out of a mole hill," as he *seems to have* taken it for granted, because the statement to which he takes exception was made by an ordnance officer, that the Ordnance Department intends to saddle the 3".2 gun on the artillery for horse artillery purposes. Not believing this, *I see no special reason for joining* him in his war upon the 3".2 gun; for I am satisfied that it is not quite so "mean" a gun as he stated and I am equally confident, even after struggling with his most *weighty* arguments, that, in a very great emergency, it might prove sufficiently suitable to warrant its temporary use as a horse artillery gun.

REVIEWS.

CAVALRY INSTRUCTION.

BY CAPTAIN R. S. S. BADEN-POWELL,

15TH HUSSARS.

While we are, in most respects, standing still in our own cavalry, cultivating the *nil admirari* spirit of men who, because their corps *has* shown prowess in war, are unwilling to believe that there is aught more to learn, our brothers-in-arms across the water are industriously striving to keep in the front line of progress and self-improvement. Precept and example, theory and practice, are judiciously combined to keep officers and men in a constant state of military training. Rust and decay are impossible where the military machine is thus kept constantly oiled and in movement. Drill books and manuals of instruction are not only written, but are *applied* on the drill grounds and fields of manœuvre, not sent to company and troop commanders to be stored away in the dusty obscurity of orderly room book shelves. One of the most admirable of these books for the cavalry arm and to which our attention has been called of late, is the little work of Captain R. S. BADEN-POWELL, 13th English Hussars, entitled "Cavalry Instruction." It is published by HARRISON & SONS, London, and its success may be inferred from its now being in its third edition.

The plan of instruction pursued by this little manual seems so excellent for its purpose that it merits more than a passing word of comment. The object of the book is to assist the cavalry officer in the instruction of non-commissioned officers of his squadron, combining theory and practice in such a manner that the principles taught should be as thoroughly impressed on the minds of the pupils as if imparted by actual war itself.

The course is brief, extending over only four weeks. The theoretical instruction is held indoors each afternoon: the application of each afternoon's lecture taking place next morning, the principles previously learnt being thus applied while fresh in the mind and fixed indelibly by the practical field work. The subjects embraced in the course are only those of direct importance to the practical soldier of any grade, and though the course might be well gone over by the officer himself, the language, colloquial and devoid of technicalities, is addressed to the comprehension of the most ordinary intelligence among the non-coms. The reason for this and that rule is often given to the soldier and his attention drawn to cases in the more recent wars, illustrating the advantage of it. The interest of the men is thus kept alive and the lessons relieved of the tedium of dry, tactical essays, such as our own barrack-room recitations generally are. In other words, the spirit of Captain BADEN-POWELL's method of instructing his men is in accord with the idea that the modern soldier is no longer an unthinking, dull machine, but a rational being, upon whose individual reason and intelligence his own army is almost entirely dependent in war. His manual is the result of General Order No. 30, Horse Guards, March 1, 1881, prescribing a month's instruction for soldiers in certain duties.

The following are some of the clauses of this order, as applied to the Horse Guards:

MARCH 4, 1884.

As a corollary to General Order, No. 30, of this year, each squadron of cavalry will be annually put through a course of instruction by its own officers. The following instructions will regulate the training which will take place between the 1st of March and the 30th of June, and which will include only trained soldiers and first-class recruits:

1. The course will be limited to one month.

2. Only one squadron of each regiment will at a time be under instruction.

3. A syllabus of the course of instruction is annexed and will be furnished to all concerned.

4. This course will be generally adhered to, but where special circumstances, such as the absence of proper training grounds, necessitate a deviation from it, general officers will make such alterations as may appear expedient, taking care that the whole period of instruction is fully utilized.

5. Considerable scope is left to commanding officers in arranging details, to which their careful attention is directed. In making their arrangements, the principle will be followed that each elementary subject must be in turn completely mastered before another is proceeded with. When mastered, it will afterwards be only incidentally reverted to in combination with more advanced subjects.

6. During the inclement weather, and where no special accommodation or drill shed is available, instructions will be given in the barrack room by means of lectures, explanations and questions.

7. Every available officer, non-commissioned officer and man will be present with his squadron and relieved of all other duties while under instruction, with the exception only of bandsmen, one servant for each officer, and such non-commissioned officers as are exempted from the annual course of musketry (see Rifle Exercises and Musketry Instruction), and men of over seventeen years' service. No leave or furlough whatever will be granted, except in peculiar cases of emergency, to any one belonging to the squadron when struck off for duty.

8. Men in hospital, prison, etc., who are unable to attend with their troops, will, as soon as available, join, mounted on their own horses, the next squadron struck off for training.

9. To ensure every man and horse being properly accounted for, the daily statement (appendix) will be kept and forwarded to the general officer commanding on the completion of the training of each squadron.

10. Where regiments are broken up in consequence of squadrons being detached from headquarters, or where the nature of the duties will not allow of one squadron per regiment being struck off for training without reducing the number of nights in bed for men of other squadrons below three, general officers commanding will make the best arrangements in their power for carrying out the spirit of these regulations.

11. To enable officers to give instructions of real value, each day's work should be carefully prepared previously by the squadron commander, and an outline of it given to the other officers and non-commissioned officers of the squadron.

The squadron commander will allot to the officers under him the various branches of instruction in such manner as he may consider most conducive to the effective training of the squadron.

12. Each practice in field training will be based on a definite supposition and object, and will be carried on as far as possible under the conditions of actual warfare.

13. Explanations will in all cases precede practice on the ground and should form an important part of the instruction.

14. Instruction will extend over at least four or five hours daily, and for practical work on the ground short parades should be avoided, a period of from two to three consecutive hours being generally desirable.

17. Whenever practicable, general officers will personally supervise the troops under training, and test the merits of the instruction imparted by exercising squadrons against one another.

18. At the end of a month's course, the officer commanding the regiment will put the squadron through a searching examination, testing the knowledge of all ranks with the drill and duties in which they have been instructed during the training.

The following is a general memorandum (or syllabus) of the course prescribed, showing the division of time and subjects:

FIRST WEEK.

Instruction of the squadron mounted.

Preparation for the attack.

Execution of the attack: Cavalry *vs.* cavalry, cavalry *vs.* artillery; cavalry *vs.* infantry (Cavalry Regulations, Part II, Secs. 8 and 9 of Part III).

Escorts to guns and convoys (Part IV, Cavalry Regulations).

Field trumpet and bugle sounds.

NOTE.—These references apply to Cavalry Regulations, 1879.

SECOND WEEK.

Dismounted service.

Elements of defence of posts, explained on the ground where facilities exist, comprising improved obstacles, the principles of the defence of banks, hedges, ditches and walls (Sec. 5, paragraphs 1 to 15, Manual of Elementary Field Engineering).

Marches (Part IV, Sec. 10, Cavalry Regulations).

Duty of covering a body of troops on the march.

Advanced guard: Its formation and conduct on a road, a plain, entering a village and approaching a defile.

Flanking parties: Collision with the enemy.

Rear guard: Its formation, object, and conduct in advance and retreat (Instructions for Cavalry Advance and Rear Guards, Chapter I).

THIRD WEEK.

Reconnoitering, its object: ordinary patrols by day and night in close and open country: reconnoitring a defile, wood, village and river: flanking patrols (Chapter III, Instructions for Cavalry Advance and Rear Guards.)

Outposts, general principles; division of squadron: advance line of vedettes, their posting, orders, visiting and relief: detached posts: picquets, their object, position, strength and telling off: patrols; supports: protection of flanks and connection between several units: procedure on attack: preparation of picket for defence: withdrawal and retreat. Disposition at night, whereunderstood, to be practiced after dark (Chapter II, Instructions for Cavalry Advance and Rear Guards).

FOURTH WEEK.

Camping: To unpack, pitch, strike and pack tents: telling off and exercise of cooking, latrine, water, ration and wood parties (Regulations for Encampment).

Construction of field kitchens and latrines, trenching of camp and water supply (Paragraphs 1 and 2, Sec. 18, Manual of Elementary Field Engineering).

Bivouacs and their protection, (Idem, paragrah 15).

Picketing.

TOPOGRAPHY.

FIRST DAY.

INDOORS.—Object: Nature of map. Scale: North Point.
Draw and explain map on board. Draw conventional signs, and give out signs to copy.
Explain hills: Dictate a sketch.

SECOND DAY.

OUTDOORS.—Draw road sketch; also note one in field book and plot it on return.
OUTDOORS.—Class take notes of a road and plot it on return to barracks; exhibit specimen road sketches to each man and make him read them.

THIRD DAY.

(1) INDOORS.—Landscape sketch reproduced as map; class in turn read portion of map aloud; illustrate, taking directions by sun, each man writes down instructions from map for man to find his way. Heads of reports.
(2) OUTDOORS.—Set map with ground; men in turn find way for party by map; compare contoured map with ground represented. Find bearings by sun. Test paces of horse.

FOURTH DAY.

MORNING.—Outdoors. Measuring heights, distances, gradients. Principles of drawing field sketch with rules and compass using base.
INDOORS.—Teach how to copy map, (1) by tracing, (2) with squares. Give specimen sketch on board to be copied with squares. Dictate suitable report in accordance with special idea. Dictate skeleton of road for fifth day.

FIFTH DAY.

Proceed along a road, using the above skeleton map, filling in details as they go; make special sketch and report in accordance with a special order. Verbal memory report of return road to be expected.
AFTERNOON.—Indoors. Class draw fair copy of morning's sketch and report. Correct these and show specimens of sketch and report.

SIXTH DAY.

Send men out individually with instructions for each pair and road sketch to show him the way. Omissions to be filled in, and sketch and report of special feature to be prepared.
——— Fair copy in afternoon.

Captain BADEN POWELL, acting on the above order and memorandum, has divided the course into twenty-four lessons, assigning to each day the definite subjects to be discoursed, the theoretical instruction being held in the afternoon, as already stated, and the practical application of it taking place next morning. A portion of each afternoon's session is also devoted to questions on the previous day's work. These questions are definitely stated and numbered, so that the book combines the advantages of a teacher's manual to that of a compendium of military knowledge.

It is impossible in a review of this length to quote sufficiently from this admirable little manual to give an idea of the value of its information and the simple, practical language in which it is conveyed. We commend the book (obtainable from HARRISON & SONS, London, or from Secretary of Infantry and Cavalry School, Fort Leavenworth) to be perused by United States cavalrymen.

S. C. R.

HARPER'S PICTORIAL HISTORY OF THE CIVIL WAR.

McDONALD BROS., CHICAGO.

This admirable work consists of two large folio volumes, containing 1000 of the maps, plans, scenes, portraits, etc., which appeared in *Harper's Weekly* during the Civil War. It is a most candid and impartial military and political history and numbers among its contributors the late President GARFIELD, General JOSEPH E. JOHNSTON, General GEORGE H. THOMAS, General WARREN and other prominent officers, both National and Confederate. In the perfection of this work all the National and Confederate official documents were at the disposal of the editors and were most freely used. The pages of the history are of the same size as *Harper's Weekly*, and among the illustrations are the following: Over 300 portraits of distinguished soldiers and statesmen, mostly from photographs taken during the war; nearly 100 maps, plans and sketches of battle-fields; nearly 600 sketches of sieges, battles, charges, hospitals, military prisons, camp life, vessels of war, naval engagements, reviews, receptions, etc. This history should be found in every library, else its war literature will be incomplete.

MISCELLANEOUS.

As I understand it to be the privilege of members of the Association to make proper "plaints and pleas" through THE JOURNAL, the writer would like to call attention to the state of cavalry instruction at Fort Leavenworth school. This school has now reached an extended sphere of instruction which embraces in its scope nearly all the practical branches of military education. Reconnoisance and scouting, topography, engineering, strategy, tactics, riding — all these are *practically* taught, except the latter. That there should be at a school thus intended to fit officers for the practical duties of the staff and line, no course of riding seems, at the first glance, absurd. It would be, were it not that the actual effects of such a deficiency are so seriously damaging to the school. Many officers of infantry now come to this school totally unused to the saddle. During their course they are frequently obliged to take the field, mounted, in practical work of marches, scouts, advanced guard, etc.,— work that often requires them to be on horseback a whole day at a time. Instead of having a proper riding dress, and a horse and equipment permanently assigned to him such an officer mounts any animal some troop commander can spare him, and unequipped and untrained for riding himself, starts forth to the mimic war, every yard a humiliation, and every mile one of torture. Can anyone expect this officer to enjoy, or take any interest in duty under such circumstances? Can he display dash, enterprise and efficiency as a chief of scouts, or commander of advance guard? There have been, as is well known, recent cases at the school where officers not trained in riding and engaged in this duty, have been actually unable, through their lack of practice in the saddle, to follow such operations after a few hours hard riding.

This field work in the minor operations of war is already giving advantages to the young officers of the school which is of incalculable advantage, and which they can enjoy nowhere else in our army. It is safe to say that with the advantage of its surrounding typography and the interest the instructors of the school are taking in this work, this school will eventually afford instruction of this sort equal to that of the best European schools. But in order to do it most effectually, the officers *must be horsemen* to some extent, at least. The school then should have as one of its first necessities, a riding hall and the necessary number of horses. Thirty horses would be sufficient for the purpose. The riding hall should be one worthy of a large school of application under a wealthy government — no mere make-shift needing continual repairs. It should be of stone fully 100 yards by 33 yards, provided with plenty of windows, good lighting facilities for early morning work in winter, and two large mirrors at the ends, that officers may see and correct false positions in the saddle. Such a hall, *with the aid of prison labor*, would cost, say, $10,000. The horses, at $150 apiece, would be $4,500, making the total cost of the whole department in the outset only about $15,000. This surely is a mere *bagatelle* in comparison with the good to be achieved, or with the expense lavished in foreign armies upon their courses in riding. It may be cited, for example, that the French school of Application for Cavalry at Saumur, has four large riding halls — three of them larger than the one here proposed — and 918 horses. The latter comprise many expensive animals of different breeds. The annual expense of maintaining the very small squad of horses named above would not be $500. They could be either distributed among the troops of cavalry stationed here and cared for by the men of these troops, or else by a detachment of cavalry like the one at West Point. The plan is feasible and cheap, and besides its great importance to the school itself, would be hailed with delight by troop commanders who are now compelled to destroy the efficiency of their horses and men by mounting the school officers in their various duties. We hope this plea may arrest the eye of the person for whom it is intended and that those facilities may be soon given us. The present C. O. of the school fully appreciates the necessity of them, and nearly a year ago submitted estimates for a riding *shed*. Let us have a permanent structure of proper size instead. No money for the army could be better spent.

It is a gratifying thing to look over the list of membership of the Cavalry Association and note the additions it has received in the past few months, but it is hard to understand why any cavalry officer of our army should fail to appreciate its benefits to his corps, and withhold his name from the list of members. The admission fee is trivially small. The JOURNAL has already demonstrated its value to our cavalry service by the papers it has given to its readers, and the two main objects of the Association — the advancement of the future professional interests of the cavalry, and the writing of a history of its past achievements, should, we think, secure the co-operation of every cavalryman in the service. The inducement which such a professional medium as the JOURNAL offers for the writing of professional papers is clearly evidenced by the contents of the present number. It may be asserted, perhaps, that had the JOURNAL accomplished nothing more than the bringing to light of a half a dozen critiques as able as some it has already published, it would have fulfilled no mean mission towards the Cavalry Association.

But whatever it may have already accomplished, it can and will do more in the future with the proper support. Officers of cavalry of rank and experience on northern and southern sides have promised to contribute papers upon the "raids, strategic marches, campaigns and battles engaged in by the cavalry during the late war," and the record they will form of the achievements of the arm during the war, cannot fail to be of interest and value to our cavalry to-day. In fact, they will form the *only* record extant of such achievements, the history of the Union cavalry, especially, being entirely unwritten.

The writer of this, writing as he does purely through a desire to see the cavalry arm prosper, would like to say for the benefit of those officers who hesitate to join the Association, that the brunt of the work relating to the Association and its JOURNAL, has fallen, thus far, upon a little band of cavalry officers at Fort Leavenworth, who have by their subscriptions, their pens and their presence at the weekly or bi-weekly meetings, gallantly supported the Association through its infancy. The Secretary has without any reward, save the professional satisfaction of having served his arm, labored most untiringly in its behalf. The work — correspondence, copying and proof reading — thus imposed upon him, would have kept fairly employed a government clerk. While a few thus demonstrate their willingness to labor for a common good, it is certainly not extravagant to request some co-operation on the part of their comrades-in-arms. Let those who have not done so present their names for membership, and use their pens to express their ideas or experience, where they feel competent to do so.

Branches should be established at all cavalry posts — no better or more interesting employment of a literary sort could be devised for our officers than the writing and discussion of written papers concerning the use of cavalry in war, sketches of its leaders, etc., and especially when such matter concerns our own service. Cavalry officers are also requested to consider the columns of the JOURNAL as a medium for any suggestions concerning the needs of the cavalry service they may have to offer from their different posts. R — .

LEGATION DE FRANCE,
AUX ETATS-UNIS.
WASHINGTON, D. C., Oct. 1, 1888.

To Brevet Major General W. Merritt, Commander Department of the Missouri.

SIR: — I have just received through Lieutenant HEIN, a certificate of associate membership in the United States Cavalry Association. I beg to present you my thanks for the honor thus conferred upon me.

Let me add that I am very anxious to make myself useful to your associates, and you will place me under obligations any time you give me the opportunity to do so.

Very respectfully, Sir, your most obedient servant.

MAJOR LÖTTIN,
Military Attaché of France.

CAVALRY SOCIETY OF THE ARMIES OF THE UNITED STATES.
TREASURER'S OFFICE,
206 BROADWAY, NEW YORK, October 25, 1888.

Secretary United States Cavalry Association:

DEAR SIR: — I am very late in acknowledging the receipt of the JOURNAL of your Association, which you so kindly sent me, but I wanted to find time in the midst of my business engagements to read it carefully, which I have done with great pleasure and profit.

It is not one of the least of the blessings that followed our war of twenty-five years ago that it set the army to thinking, and as a result we have your Association, which appears to be doing good work, if its published JOURNAL is any indication.

My service with the cavalry in our war has given me great interest in all that relates to that branch of the service, and I should like therefore to join your Association, if it is permissible to take in those of us who served in the volunteer cavalry; and I forward enclosed application and $2.00 entrance fee. I was First Lieutenant in the 6th Pennsylvania Cavalry, which was organized by Colonel RUSH, as a regiment of Lancers, but during the greater part of my service I was an aide-de-camp on the Cavalry Corps Staff of the Army of the Potomac, with General PLEASANTON, and afterwards with General SHERIDAN.

Respectfully,

GERRARD IRVINE WHITEHEAD.

THE PUBLIC SERVICE REVIEW, AUGUST, 1888.

Certain cavalry operations at Gettysburg deserve more conspicuous permanent land-marks on that field than they have yet received. The positions held by one or two regiments and by General GREGG's troops at certain periods of the battle have been indicated by suitable shafts of granite. The most important spot, however — that upon which BUFORD contested the enemy's infantry advance on the morning of the first day and by his masterly handling of dismounted cavalry made it possible for the Army of the Potomac to select a position and gain at the start an advantage which it maintained throughout that herculean struggle — is yet without even a finger-post to catch the traveler's eye.

As everything connected with this historic field grows in interest with the lapse of time, surely the ground of the initial operations upon the success of which so much depended, not only regarding the single battle, but perhaps the result of the War, should bear some enduring monument of its glorious past.

The useful if not brilliant part taken by the Regular Brigade on the left flank on the third day should not go unmarked. While the casualties at that point were not large, yet it was the fitting consummation of a month's campaign of daily and bloody encounters with the enemy's cavalry — foemen indeed worthy of any brave man's steel — in which the losses of the Regular Brigade bore witness to the stubborn nature of the conflict. The mobility of the arm gave a serial character to the operations of the Regular Brigade which come under the general head of "The Gettysburg Campaign" and can be most suitably commemorated upon a granite block, to be erected on the extreme left of the Union line.

We understand that the Chairman of the Gettysburg Memorial Committee (Colonel TAYLOR) has already recognized the propriety of placing a suitable monument where BUFORD "opened the ball" with musical crack of carbine and shriek of shell, and it would seem a proper matter for the encouragement of the U. S. Cavalry Association, if only for the reason that the incident illustrated, on a large scale, one of the boldest and ablest uses of American cavalry in modern times.

Through the machinery of the same body perhaps the regular cavalry might contribute toward the erection of an obelisk in memory of the marches, bivouacs and combats which led MERRITT's brigade up to one of the decisive battle-fields of history.

Let no more money be expended in *regimental* field-marks, but let the offerings be merged into a fund for the division and brigade mentioned, so that a trifle from each individual cavalryman may contribute to an important memorial.

EXCHANGES.

UNITED STATES.

Public Service Review.
Journal Military Service Institution.
Proceedings of the U.S. Naval Institute.

ENGLAND.

Proceedings of the Royal Artillery Institute.
Illustrated Military and Naval Magazine.
Journal of the United Service Institution of India.
Journal of the Royal United Service Institution.

FRANCE

Revue du Cercle Militaire.

BELGIUM.

Revue Militaire Belge.

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†Lemay, D.....U. S.
Leoser, C. McK., late Capt. 2d Cav., Bvt Col., U. S. A.
Lewis, Thomas J.....1st Lieut. 2d Cavalry
†Lincoln, James Rush, Commandant Iowa Agricultural College.
Lochridge, P. D.....2d Lieut. 3d Cavalry
Lockett, J. B.....1st Lieut. 4th Cavalry
†Loew, H. J., Light Horse Squadron, W. N. G.
London, R.....1st Lieut. R. Q. M., 5th Cavalry
†Lottin, V.....Major, Mil. Attache of France
†Lovell, R. A.....1st Lieut. 14th Infantry
Luff, E.....Captain 8th Cavalry
*Macauley, N. P.....Capt. M. D.
Macdonald, G. H.....2d Lieut. 1st Cavalry
Mackay, J. O.....1st Lieut. 3d Cavalry
Macomb, A. C.....2d Lieut. 7th Cavalry
Mann, J. D.....2d Lieut. 7th Cavalry
†Martin, G. W.....2d Lieut. 18th Infantry
†Martin, J. P.....Lieut. Col., Asst. Adj't Gen'l.
*Martin, H. McLane.....San Francisco
Mason, S. A.....Capt. 4th Cavalry
McClellan, H. B., Major, late A. General Stuarts C. S. Cavalry Corps.
McDermand, E. J.....1st Lieut. 2d Cavalry
McClure, N. F.....2d Lieut. 4th Cavalry
†McCrary, W. C.....Lt. Cav. Troop, Kan. City.
†McCook, A. McD., Col. 6th Inf., Bvt. Maj. Gen'l U. S. A.
†McCreery, G.....Captain M. D.
McDonald, J. B.....2d Lieut. 10th Cavalry
†McIntosh, H. S., 2d Lieut. L. Cav. Troop, Kansas City.
†McIntyre, F.....2d Lieut. 19th Infantry
Merritt, W., Brig. Gen'l, Bvt. Maj. Gen'l U. S. A., late Commander Cavalry Corps Army of Potomac.
†Meinecke, A.....Lt. Horse Squadron, W. N. G.
Michler, F.....Capt. 5th Cavalry
†Millard, F. H.....Lt. Horse Squadron, W. N. G.
†Miller, J.....Lt. Horse Squadron, W. N. G.
Miller, W. H.....1st Lieut. 1st Cavalry
Mills, A. L.....2d Lieut. 1st Cavalry
Mizner, J. K., Lieut. Col. 8th Cavalry, late Col. 3d Michigan Cavalry.
Montgomery, R. H.....Captain 5th Cavalry
Moore, F.....Capt. 9th Cavalry
Morgan, G. H.....1st Lieut. 3d Cavalry
†Morris, C. W.....Lt. Horse Squadron, W. N. G.
Moylan, M.....Capt. 7th Cavalry
Munford, Thos. T., Gen'l, late Col. 2d C. S. Va. Cavalry.
†Murray, A.....Capt. 1st Artillery
Murray, C. H.....1st Lieut. 4th Cavalry
†Myers, H. E., 1st Lieut. 1st Cleveland Troop, O. N. G.
Nolan, J. E.....2d Lieut. 4th Cavalry
Nordstrom, C. E.....1st Lieut. 10th Cavalry
Norvell, S. T.....Capt. 10th Cavalry
†Nowell, W. A., 1st Lieut. Lt. Horse Squadron, W. N. G.
Nowlan, H. J.....Capt. 7th Cavalry
†Noyes, C. R.....1st Lieut. 9th Infantry
†O'Connell, J. J.....Capt. 1st Infantry
O'Connor, C. M., 1st Lieut., Adj't 8th Cavalry
Olmstead, J. A.....Capt. 9th Cavalry
Otis, E.....Col. 8th Cavalry
Overton, G. E.....Capt. 6th Cavalry
Paddock, G. H.....1st Lieut. 5th Cavalry
Paddock, J. V. S.....1st Lieut. 5th Cavalry
Paddock, R. B.....2d Lieut. 6th Cavalry
†Page, C.....Colonel, M. D.
Parker, D. W.....Late Lieut. 6th Cavalry
Parker, James.....Captain 4th Cavalry
Parker, M. D.....1st Lieut. 9th Cavalry
†Parsons, E. B.....Late Col. U. S. Volunteers
†Patterson, G. T. T.....1st Lieut. 14th Infantry
Payne, J. A.....1st Lieut. 19th Infantry
†Penrose, C. B.....Capt. S. D.
Perrine, H. P.....Capt. 6th Cavalry
Pershing, J. J.....2d Lieut. 6th Cavalry
Pitcher, Jno.....1st Lieut. 1st Cavalry, A.D.C.
Pond, G. E.....Capt. Q. M. D.
†Potter, J.....2d Lieut Corps Engineers
†Pratt, Sedgwick.....1st Lieut. 3d Artillery
†Preusser, H.....Lt. Horse Squadron, W. N. G.
†Quinn, H. S.....Lt. Cav. troop, Kansas City
Rafferty, W. A.....Capt. 6th Cavalry
Rawolle, W. C.....Capt. 2d Cavalry
Read, G. W.....1st Lieut. 5th Cavalry
Rice, S.....2d Lieut. 7th Cavalry
Richards, J. R.....1st Lieut. 4th Cavalry
Richter, A.....Lt. Horse Squadron, W. N. G.
Richter, R. G., 2d Lieut. Light Horse Squadron, W. N. G.
Ripley, H. L.....1st Lieut. 3d Cavalry
Robertson, S. C.....2d Lieut. 1st Cavalry
Robins, E.....2d Lieut. 3d Cavalry
†Robinson, S. Q.....Capt. M. D.
Rodenough, T. F., Col. Bvt. Brig. Gen., U. S. A. Late Colonel 18th Pa. Cavalry
Rodgers, Alex.....Capt. 4th Cavalry
Roe, C. F.....Late 1st Lieut. 2d Cavalry
†Rouse, H. C.....1st Cleveland Troop, O. N. G.
†Rucker, W. A.....Lieut. Col. P. D.
Russell, F. W.....Late Lieut. 6th Cavalry
†Russell, G. B., Capt. 9th Inf. Bvt Maj. U. S. A.
Russell, Gerald.....Capt. 3d Cavalry
†Saffold, M. B.....1st Lieut. 13th Infantry
Sands, G. H.....1st Lieut. 6th Cavalry

Sanford, G. B., Major 1st Cav., Bvt Lieut. Col., U. S. A.
†Sanger, J. P., Capt. 1st Art., Bvt Major, U. S. A.
†Satterlee, C. B. ... 1st Lieut. 3d Art'y
Sayre, Ferrand ... 2d Lieut. 8th Cavalry
†Schenck, A. D. ... 1st Lieut. 2d Art'y
†Schoeffel, Geo. J., Captain L't Horse Squadron, W. N. G.
Schofield, C. B. ... 1st Lieut. Adjt. 2d Cavalry
Schuyler, W. S. ... Captain 5th Cavalry
Scott, W. S. ... 2d Lieut. 1st Cavalry
†Seaman, G. B., L't Horse Squadron, W. N. G.
†Sharp, H. G. ... Captain Sub. Department
Shipp, W. E. ... 2d Lieut. 10th Cavalry
Shunk, W. A. ... 1st Lieut. 8th Cavalry
Sibley, F. W. ... 1st Lieut. 2d Cavalry
Slocum, H. J. ... 1st Lieut. 7th Cavalry
Slocum, S. L. H. ... 2d Lieut. 8th Cavalry
†Smith, A. J. ... General Late U. S. Vol.
Smith, Sebree ... 1st Lieut. 2d Art'y
Smith, W. H. ... 2d Lieut. 10th Cavalry
Spaulding, E. J. ... Major, 4th Cavalry
Spencer, I. E. ... 2d Lieutenant, C. E.
Sprole, H. W. ... Captain 8th Cavalry
Squires, H. G. ... 2d Lieut. 7th Cavalry
Stanton, Wm. ... Captain 6th Cavalry
Stevens, C. J. ... 2d Lieut. 9th Cavalry
Stevens, E. G. ... late Lieut. 5th Cavalry
Stotzenberg, J. M. ... 2d Lieut. 6th Cavalry
Stuart, Cecil ... 2d Lieut. 3d Cavalry
†Sullivan, J. M., 2d Lieut. Cav. Troop Kan. C'y
Sumner, E. V., Maj. 5th Cav., Bvt Lieut. Col., U. S. A., late Col. 1st N. Y. M. Rifles.
Sumner, S. S. ... Major 8th Cavalry
Swift, E. ... 1st Lieut. 5th Cavalry, A. D. C.
Swigert, S. ... Captain 2d Cavalry
Tate, D. Lysle ... 2d Lieut. 1st Cavalry
Taylor, F. B. ... Capt. 9th Cavalry
Thayer, A. ... 2d Lieut. 3d Cavalry
Thomas, E. D. ... Capt. 5th Cavalry
Tompkins, C. H., Col. Q. M. D., Bvt. Brig. Gen'l U. S. A.
Tompkins, S. R. H. ... 2d Lieut. 7th Cavalry
Traub, P. G. ... 2d Lieut. 1st Cavalry
Trout, H. G. ... 2d Lieut. 9th Cavalry
Tupper, T. C. ... Major 6th Cavalry
Upham, F. K. ... Capt. 1st Cavalry
Upham, J. J. ... Lieut. Colonel 8th Cavalry
†Vance, F. L. ... Lgt. Horse Squadron, W. L. G.
Viele, C. D. ... Capt. 10th Cavalry
†Vinay, R. W. ... Lgt. Horse Squadron, W. N. G.
Volkmar, W. J. ... Major, A. G. D.
Vroom, P. D. ... Capt. 3d Cavalry
Wade, J. F. ... Colonel 5th Cavalry
†Wagner, A. L. ... 1st Lieut 6th Infantry
Wagner, H. ... Captain 1st Cavalry
Wainright, R. P. P., 1st Lieut. Adjt. 1st Cavalry
Waite, H. De H. ... 1st Lieut. 5th Cavalry
Walcutt, C. C. ... 2d Lieut. 8th Cavalry
Wallace, W. M. ... Captain 6th Cavalry
Ward, F. K. ... Captain 1st Cavalry
Waterman, J. C. ... 2d Lieut. 7th Cavalry
Watts, C. H. ... 1st Lieut. Adj. 5th Cavalry
†Webster, H. ... Past Asst. Engineer, U. S. N.
Weeks, H. S. ... Captain 8th Cavalry
Wells, A. ... Captain 8th Cavalry
†Wetherill, A. M., 1st Lieut. R. Q. M., 6th Infantry.
Wesendorff, M. ... Captain 1st Cavalry
*Wetmore, W. B. ... Late Lieut. 6th Cavalry
†Wettlang, L. ... Light Cavalry Troop, K. C.
†Wharton, J. S. ... L. H. Squadron, W. N. G.
Wheelan, J. N. ... Captain 2d Cavalry
†Whipple, C. W. ... Captain Ord. Corps
†Whipple, C. H. ... Major P. D.
Whipple, H. S. ... 2d Lieut. 10th Cavalry
Whitehead, G. W., late 1st Lieut. 6th Pennsylvania Cavalry and additional A. D. C., Cavalry Corps, Army Potomac.
Whiteside, S. M. ... Major 7th Cavalry
Wilkinson, J. W. ... 1st Lieut 7th Cavalry
Willcox, E. F. ... 1st Lieut. 6th Cavalry
Williams, R. A. ... Capt. 8th Cavalry
Williamson, G. McK. ... 2d Lieut. 6th Cavalry
Wilson, J. H., late Maj. Gen. Commanding Cavalry Corps Sherman's Army.
†Wilson, Jos. Lapsley, 1st Lieut. 1st Phila. City Troop.
†Wilson, T. H. ... 2d Lieut. 2d Infantry
†Winding, Geo. L. ... L. H. Squadron, W. N. G.
Winn, J. S. ... 2d Lieut. 2d Cavalry
†Winsor, H. ... late Capt. 6th Pa. Cavalry
Wint, T. J. ... Capt 4th Cavalry
†Wisser, J. P. ... 1st Lieut. 1st Artillery
Wood, A. E. ... Capt. 4th Cavalry
Wood, E. E. ... Capt. 8th Cavalry
†Woodhull, A. A., Maj. M. D. Bvt. Lieut. Col. U. S. A.
Woodson, A. E. ... Capt. 5th Cavalry
Wright, E. S. ... 2d Lieut. 9th Cavalry
Young, S. B. M., Maj. 3d Cav., Bvt. Col. U. S. A. late Col. 4th Pa. Cavalry.
Zogbaum, R. F. ... New York City

DECEASED MEMBERS.

Col. W. J. Elliott, Brevet Major General U. S. A.
Capt. C. H. Rockwell, 5th Cavalry.
Capt. J. C. Dunlap, Kansas City Light Cavalry.
Major H. J. Farnsworth, Inspector General.

† Associate member.
* Life member.