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THE FIRST (FOURTH) MASSACHUSETTS VOLUNTEER CAVALRY AT HIGH BRIDGE, VIRGINIA, APRIL 6, 1865.

[Republished by permission, from the Annual Report of the Adjutant-General, Commonwealth of Massachusetts, for 1865, contained in History of the First Massachusetts Volunteer Cavalry.]

THE Fourth Regiment Massachusetts Cavalry Volunteers was organized by Special Order No. 70, series 1864, from the War Department, Washington, D. C., dated February 12, 1864, ordering that the battalion of cavalry known as Independent Battalion Massachusetts Cavalry, serving in the Department of the South, and formerly of First Massachusetts Cavalry, be, together with First Battalion Veteran Cavalry, then recruiting in Massachusetts, constituted Fourth Massachusetts Cavalry.

When the year 1865 opened, the regiment was divided as follows: Two companies were stationed at Jacksonville, Florida; two at Devaux Neck, South Carolina; two at headquarters Twenty-fourth, and two at headquarters Twenty-fifth Corps, before Richmond; one at Williamsburg, Va., and one at Harrison's Landing, Va. The headquarters of the regiment, with two companies, were at Vienna, Va., attached to the headquarters of the Army of the James.

When the Army of the James moved from its winter quarters, on the 28th of March, Companies "A" and "K" remained attached to the Twenty-fourth Army Corps, and took part in the engagement

of that corps while in pursuit of the Army of Northern Virginia. Companies "E" and "H" remained with the Twenty-fifth Army Corps before Richmond, and were the first troops to enter the city (April 3d). The guidons of these companies were the first Union colors carried into Richmond, and raised by Union troops. They floated from the Capitol building until a larger flag supplied their place. That part of the regiment attached to the headquarters of the Army of the James (Companies "I," "L" and "M"), commanded by Colonel FRANCIS WASHBURN, marched with them to Burkesville, arriving on the night of April 5th.

THE FIGHT AT HIGH BRIDGE.

Early on the following morning, in compliance with orders received the night previous, Colonel WASHBURN, with two regiments of infantry, each about 400 strong, and a part of his own force of cavalry, numbering thirteen officers and sixty-seven men, started to destroy High Bridge, eighteen miles distant, and of great importance to the retreating Rebel army. The bridge was reached about noon, the enemy offering feeble resistance to his advance. The infantry was halted in the vicinity of the bridge, while the cavalry pushed on about two miles further, meeting a superior force of the enemy's cavalry, with artillery. A short time before the bridge was reached, Brevet Brigadier-General THEODORE READ arrived, with orders to hold and not destroy the bridge. He took command. The cavalry retired to the bridge, and found the infantry warmly engaged with another force of the enemy's cavalry, and showing signs of breaking. It was soon evident that the enemy was superior in numbers, and that a fight at long range could not be maintained until General ORD could be apprised of their situation, and could send infantry—the only troops he had—to their relief. Thus situated between two forces of the enemy—the larger between him and the Army of the James—to charge and break through the enemy, if possible, seemed the only honorable course for General READ to take; no other was suggested.

Twice the cavalry charged, breaking through and dispersing one line of the enemy; re-forming and charging a second, which was formed in a wood, too dense to admit of the free use of the saber. In vain, however; eight of the twelve officers engaged were put *hors de combat;* three killed and five severely wounded. The little band was hemmed in and overpowered by two divisions of cavalry—ROSSER's and FITZHUGH LEE's—the advance of General LEE's army.

Colonel WASHBURN, whose intrepid bravery in this fight endears his name to his associates, and adds the crowning glory to a life elevated by the purest patriotism, died a few weeks afterwards from the effects of his wounds.

Because of the influence of the affair upon the results of the campaign, I have dwelt upon it. "To the sharpness of that fight," says a Rebel colonel, Inspector-General on LEE's staff, to General ORD, "the shutting-off of LEE's army at Appomattox Court House was probably owing. So fierce were the charges of Colonel WASHBURN and his men, and so determined their fighting, that General LEE received the impression that they must be supported by a large part of the army, and that his retreat was cut off."

Acting under this impression he halted his army, gave what the Inspector-General calls "stampeding orders," and began to throw up the line of breastworks which was found next day. Three trains of provisions, forage and clothing, which had been sent down from Lynchburg, on the South Side Road, were sent back to prevent them from falling into our hands, and his army, which was on one-third rations, and those of corn only, was thus deprived of the provisions, the want of which exhausted them so much.

Moreover, by the delay occasioned by this halt, General SHERIDAN was enabled to come up with EWELL's division at Sailor's Creek. When LEE discovered his mistake, and that the fighting force in his front was only a small detachment of cavalry and infantry, General ORD, with the Army of the James, had already profited by the delay, and so closed up with him that a retreat directly south was no longer practicable; he was obliged to make the detour by way of Appomattox Court House. General ROSSER concurs in this opinion, and states that the importance of the fight has never been appreciated.

That Lieutenant-General GRANT and General ORD appreciated its importance and confirmed the principal facts stated above, is shown by the following extract from General GRANT's report of the armies of the United States: "General ORD advanced from Burkesville towards Farmville, sending two regiments of infantry and a squadron of cavalry, under Brevet Brigadier-General THEODORE READ, to destroy the bridge. The advance met the head of LEE's column near Farmville, which it heroically attacked and detained until General READ was killed and his small force overpowered. This caused a delay in the enemy's movements, and enabled General ORD to get well up with the remainder of his force, on meeting which the enemy immediately intrenched himself. In the afternoon General SHERIDAN struck the enemy south of Sailor's Creek," etc.

I have said little of the two regiments of infantry engaged, because they failed to support the charges of the cavalry, and fought feebly.

THE FIGHT AT HIGH BRIDGE. (SECOND ACCOUNT.)

The opening of the spring campaign of 1865 found the old Independent Battalion, then the First Battalion of the Fourth Massachusetts Cavalry, in a somewhat divided condition. Company "K" was on detached service at the Twenty-fourth Corps' headquarters in front of Richmond, while Companies "I," "L" and "M," with the field and staff of the regiment, were on duty at the headquarters of General ORD, commanding the Army of the James. These three squadrons, under the immediate command of Colonel FRANCIS WASHBURN, had been so reduced by details for orderly and courier duty, in addition to other causes, that when orders to break camp were received on the 27th day of March, but twelve officers and 149 men could be mustered for duty. This force was in attendance upon Major-General ORD, who moved on the morning of the 28th with those divisions of the Army of the James which participated with the Army of the Potomac in the final attack upon Petersburg. Early on the morning of the 3d of April Petersburg was evacuated, and the Federal armies moved at once in pursuit of the retreating foe, the Army of the James proceeding by the line of the Lynchburg Railroad. These three squadrons were not engaged in any fighting during the momentous days following the retreat of LEE from Petersburg and Richmond, but the close of each day saw the numbers of the little band diminishing, by reason of details for orderly duty, etc. The weather had been beautiful, the spring far advanced, and an officer of the Fourth, writing a few hurried lines to friends at home, remarked: "It seems more like a pleasant ride into the country than like the pursuit of one army by another."

Late on the evening of the 5th of April, Burkesville was reached. General LEE, with the Army of Northern Virginia, was marching on a line nearly parallel with the Army of the James, and on the night of the 5th of April was at Amelia Court House.

A few miles northwest of Rice's Station the Appomattox River is crossed by the South Side Rilroad at High Bridge, a long and lofty trestle-work structure, famous throughout that region. The railroad then cuts across a northerly loop of the Appomattox, and takes to the southern bank, where the river is bridged at Farmville. Leaving Amelia Court House with his army during the night of April 5th, General LEE hoped by a rapid march to cross the Appomattox at Farmville, thirty-five miles west, destroy the bridges, and escape towards Lynchburg. Foreseeing this movement, General GRANT had directed General ORD to send a detachment to burn these bridges if possible, and thus hinder LEE's march. The execution of this difficult and dangerous duty was intrusted to Colonel WASHBURN. Shortly before midnight on the 5th of April, WASHBURN received orders to take command of a small force, consisting of his own cavalry, the whole available strength of which, with him, was then but thirteen officers (Captain GODDARD having joined at Burkesville from leave of absence, not then expired) and sixty-seven men, with two small regiments of infantry, the Fifty-fourth Pennsylvania and the One Hundred and Twenty-third Ohio, and to move early on the morning of the 6th to destroy the bridges over the Appomattox near Farmville, some sixteen or eighteen miles distant from Burkesville Junction. At 4 o'clock on the morning of the 6th of April this small command, less than 700 strong, left their smouldering camp fires; the men, particularly of the infantry, exhausted by the severe marches of the few previous days, were hardly in condition for the hazardous duty to which they were called. The march was necessarily slow, as the cavalry had to regulate their pace by that of the tired infantry. As the column advanced, signs of the near proximity of the enemy became more and more apparent, and it was soon evident that the expedition partook, in a great degree, of the character of a forlorn hope.

A few hours after the column had started, and LEE's line of retreat had developed itself, General ORD received information of the exact locality of the Confederate army, and at once sent Brevet Brigadier-General THEODORE READ, Assistant Adjutant-General of the Army of the James, to inform Colonel WASHBURN of his danger, and to order him to return. By dint of hard riding, READ, with a single orderly, overtook the detachment very near the locality where, an hour later, the battle of High Bridge was fought. Messengers sent out by General ORD shortly after READ had started, were driven back by the enemy, who, in their retreat towards Farmville, had swung into the same road along which, only a short time previous, WASHBURN, with his command, had marched, and the spectacle was presented of a hostile army filling the road between WASHBURN's troops and the Army of the James, and neither WASHBURN nor the Confederate leaders were aware of the close proximity of the other.

Shortly after General READ had joined the command of Colonel WASHBURN, it was ascertained that, from the direction of the march of the Confederate army, it had become impossible to rejoin General

ORD, and nothing remained but to push forward and endeavor to destroy the High Bridge. The column accordingly advanced a short distance further, until it arrived within sight of the structure, then rather more than three-fourths of a mile distant. The intervening country was marshy and inaccessible to cavalry. Furthermore, it was discovered that there was a strong redoubt at the head of the bridge, toward Farmville, covering with its guns all the surrounding country, which was open and marshy; and it was certain that, if a direct assault should be attempted, the attacking force would melt away before it could reach the enemy's abattis.

By making a wide detour and coming on the rear of the redoubt, it was thought that a sudden attack might be successful. WASHBURN undertook the accomplishment of this with his cavalry. General READ remained with the infantry in a narrow belt of woodland, about a mile from the bridge, the country in the immediate vicinity being somewhat broken and hilly, and more or less covered with a growth of young trees. Soon after leaving the infantry, the cavalry came to a small stream, the bridge over which had been partially destroyed. On a hill just beyond was a line of low earthworks, occupied by a small force of dismounted Rebel cavalry, who opened fire immediately on the approach of the Union troops.

Lieutenant DAVIS, with the advance guard, dashed forward, swam the stream, and, while some of the men laid the planks on what stringers were left of the bridge, the remainder, under the lead of the gallant DAVIS, charged up the hill and attacked the enemy with such fury that they were driven completely back to their reinforcements, near Farmville where they made a stand. The main column came up rapidly, and threw out a strong skirmish line, engaging the enemy vigorously for about half an hour, when the superior number of the Confederates, aided by their artillery, compelled WASHBURN to withdraw.

The retreat had hardly commenced, when heavy firing in the direction of the infantry indicated the presence of a large force of the enemy. A few minutes of rapid riding brought the cavalry within sight of the belt of woodland where the infantry lay, and leaving the road, WASHBURN led his men across the country, and through a narrow ravine, to the rear of the hill where the battle was going on. Had he kept the road, a quarter of a mile further, around almost the first bend in the road, on the small hill beyond, would have brought him in direct contact with the head of the Confederate column of cavalry, which from this point filled the road back towards Burkesville as far as the eye could reach. This, however, was not

known to WASHBURN or his men at the time they left the road and struck across the country. The squadrons trotted up the slope and formed line at the summit, under the heavy fire, as calmly as if they were on review.

Then the situation became apparent. The infantry, wearied out, and with ammunition nearly exhausted, were falling back before the fierce attack of a large force of dismounted Rebels in front, who filled the air with their yells of victory. Masses of cavalry were forming on the left for a charge, and the dismounted troops in front were being rapidly reinforced by mounted men. Colonel WASHBURN sent his adjutant to the left, to rally the breaking infantry, while he himself held a hurried consultation with General READ. Upon the return of the adjutant, with information of the state of affairs at the left, WASHBURN determined at once to charge down the front of the line, throw back the dismounted Rebel troops upon their cavalry, and, by an advance of the infantry to his support, wrest victory from the enemy. It was a brilliant but desperate scheme, there being but one alternative—that of cutting through the enemy and leaving the infantry to their fate. This alternative received not a moment's consideration. The Colonel turned to his men, and in a few words told them of his purpose and its probable results.

Swinging into column of fours, the command moved at a trot to the right, and in advance of the infantry. Then quick and sharp came the order: "Fours left, gallop, march, charge!" The clear notes of the bugle rang out, sounding the charge, and the small battalion, with a ringing cheer, swept upon the foe. Quickly re-forming his command, WASHBURN retraced his steps with a large number of prisoners, the result of the charge. On approaching the edge of the woods, what was the astonishment of the officers to see the Burkesville road filled with a column of Confederate cavalry, and coming across the field, between the wood and the road, were three lines of battle. The enemy's cavalry were everywhere seen galloping to the succor of their defeated van, and the sight from the top of the hill was enough to discourage the stoutest heart. The Federal troopers drew rein to re-form for another charge, and their young colonel and their blue standard led them once more as they dashed down the gentle slope, crashing through line after line until all order was lost, and it became a hand-to-hand contest. After the officers were down and there were no leaders, little groups of our Union troops were to be seen here and there fighting desperately, and it seemed as if each man felt—

"As though himself were he
On whose sole arm hung victory,"

but another huge, grey wave, capped with its glittering crest of steel, broke over them, and their work was done.

Not a man escaped from the field. Scarcely fifteen minutes had elapsed since the first charge had been made, but in this brief space of time, of eleven officers in the cavalry who went into the fight, three were dead, five wounded, and the others unhorsed and taken prisoners. General READ was killed in the woods, almost immediately after WASHBURN had left him. The Colonel lay upon the field severely wounded, with his comrades scattered here and there, all those yet living overpowered and captured.

In that handful of heroes was one among the enlisted men, Color-Sergeant THOMAS HICKEY, towards whom the heart of every man in the regiment thrills with gratitude to this day, not only for the bravery with which he had borne the standard through the thickest of the fight, but because, when all hope of victory was gone, he had the presence of mind, and made the opportunity, to utterly destroy it before he was captured.

The battle was over. The small body of infantry, their ammunition exhausted, and deprived of the support of their cavalry, were unable to sustain the conflict with the overwhelming force of the Rebels, and had surrendered in a body. The victors had nothing further to do than to dispose of their prisoners and despoil the slain. The latter were stripped and left unburied upon the field, where they were found early on the morning of the 7th of April by the advancing troops of the Army of the James, and this was the first information which General ORD received of the result of the expedition sent out by him the day before. Colonel WASHBURN, shot in the head, and with his skull cloven by a Rebel saber, was robbed of his clothes, watch and money. Lieutenant-Colonel JENKINS was shot through the right arm; Captain HODGES, of "I" squadron, and Captain GODDARD, of "L," were killed; Captain CALDWELL, of "M," was shot through the leg; Lieutenant DAVIS, the same gallant officer who led the charge near Farmville, was shot through the body, and died shortly after the fight. Lieutenant THOMPSON, while mounted, was shot by a wounded Rebel lying on the ground, the bullet, entering near the right knee, passed up the leg diagonally across the body, and lodged near the left shoulder. He was left on the field for dead, but receiving surgical attention when the Union troops came up, and aided by a strong constitution, he recovered, rejoined the regiment a few weeks later, and served until its muster-out. Lieutenant BELCHER was severely wounded by a saber cut across the face; Adjutant LATHROP, Lieutenants SARGENT and FULLER were taken prisoners. Surgeon GARVIN, with the Chaplain, Rev. ALBERT ZABRISKIE GRAY, did not go into the fight; they remained in the rear when the first charge was made and were captured after the battle was over. The wounded were left in a house near the field, without care, medical attendance or food.

It would be difficult indeed to find in the history of modern warfare anything more brilliant than this action at High Bridge. It seemed at first to be a useless sacrifice, but it proved to be so far from this that it probably very materially hastened the great surrender. It was a battle fought against the most fearful odds, for these eleven officers and sixty-seven men attacked ROSSER's and a part of FITZHUGH LEE's divisions of cavalry, some of the finest troops in the Confederate army, while LONGSTREET's corps was within supporting distance. Nearly one hundred Rebels were killed or wounded in this engagement—from their own account—and among the slain was General DEARING, commanding one of ROSSER's brigades, one colonel, three majors and several officers of lower grades.

Colonel WASHBURN's sword was sent by General ROSSER to the widow of General DEARING, but it was afterwards recovered. The Colonel's horse was taken by General ROSSER personally.

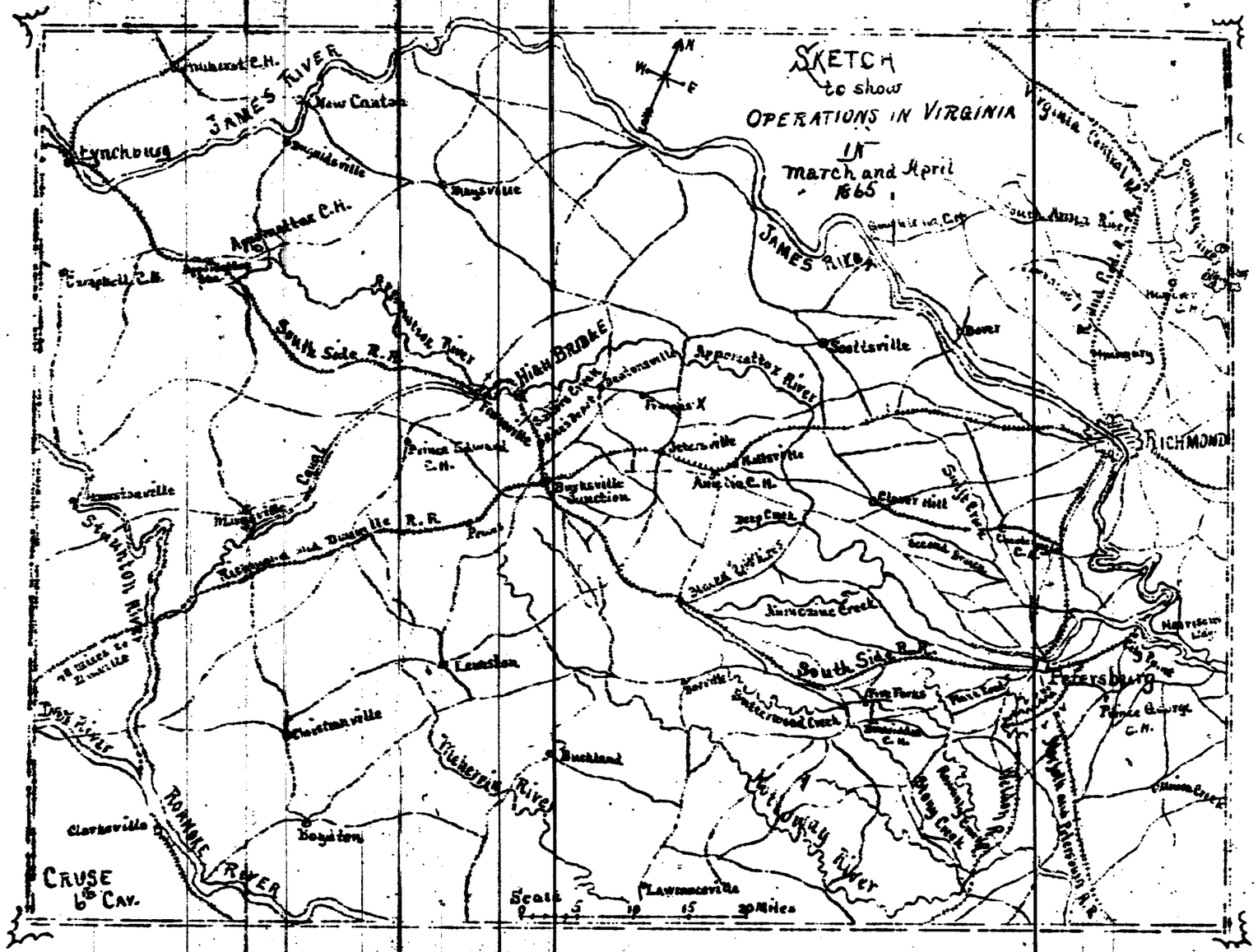
The moral effect of this battle was such that General LEE supposed the attack to be made by the advance of a large force which had in some manner outmarched him and got in his front; he therefore was so delayed in his retreat by the preparations he deemed necessary, that both SHERIDAN and ORD gained valuable hours in the pursuit. The fight took place shortly after 12 o'clock, and it was late in the afternoon before the cavalry column started on the march with their prisoners.

NOTE.—The following information, furnished by Captain HUGH G. BROWN, Twelfth U. S. Infantry, Brevet Major U. S. Army, A. D. C. to General ORD, will explain the presence of General READ, the A. A. G. and Chief of Staff of the Army of the James, with Colonel WASHBURN's command, something which the historians of the war seem not to have understood.—[EDITOR OF JOURNAL.]

The Army of the James, under orders from General GRANT, to occupy Burkesville Junction, where the Danville and South Side Railroads cross, and cut off LEE's retreat to the south through that point, made a forced march of fifty-three miles, over muddy roads, with only a few hours rest, and arrived at Burkesville at about 2:30 A. M. on April 6th. About this time General ORD received orders from General GRANT to send a detachment forward to destroy High

Bridge, twelve or thirteen miles to the front, and informing him that LEE was at Amelia Court House. Colonel WASHBURN, Fourth Massachusetts Cavalry, with two regiments of infantry — about 250 men each — and all the cavalry then with the army — eighty, all told, officers and men of the Fourth Massachusetts Cavalry — was ordered to perform this duty. He rested a little while, but marched before dawn. Shortly after Colonel WASHBURN's departure, General MICHIE, Chief Engineer, suggested to General ORD that it would be better to render High Bridge temporarily useless than to wholly destroy it, as we should probably need it ourselves in a few days, and asked to be allowed to join WASHBURN, with instructions accordingly. General THEODORE READ, Chief of Staff, also offered to go. Having some other duty for General MICHIE, General ORD directed READ to overtake WASHBURN. General READ came up with WASHBURN just before he reached High Bridge, and, after driving the guard off, READ and WASHBURN pursued the retreating enemy to Farmville with the cavalry, leaving the infantry to burn the bridge. Returning from Farmville, they found the infantry engaged with cavalry coming from the eastward.

During the forenoon, after READ's departure, General ORD, from a high point of observation, saw the smoke of an action going on to the northward, and inferring that LEE was moving in the direction of High Bridge, at once put his army in motion and tried, unsuccessfully, to get orders through to READ and WASHBURN, directing them to swing round to the southeast, towards Burkesville.



CAVALRY UPON THE FIELD OF BATTLE; BY LIEUTENANT-COLONEL PREJENTSOFF, OF THE GENERAL STAFF OF THE RUSSIAN ARMY.

TRANSLATED FROM THE RUSSIAN,
BY FIRST LIEUTENANT GEORGE W. READ, FIFTH CAVALRY.

V. CAVALRY IN THE CAMPAIGN OF 1870–71.

FOUR years after Königgrätz the Prussian cavalry again appeared as a participant upon the field of battle in the campaign of 1870–71. All the German troops taken out against France were under the personal command of King WILLIAM, and were divided into three armies.

The First Army, General STEINMETZ, consisted of three corps (First, Seventh and Eighth), each of which had two light cavalry regiments attached to the infantry divisions. The reserve cavalry comprised the First Cavalry Division of General HARTMANN, of six heavy regiments (twenty-three squadrons, six guns), and the Third Cavalry Division of General Count GRÖBEN, of four heavy regiments (sixteen squadrons, six guns); in all, the First Army included sixty-four squadrons, or counting 150 horses to the squadron, 9600 horses. In the Second Army, Prince FREDERICK CHARLES, the cavalry was distributed as follows: With the Guard Corps, the Guard Cavalry Division of General Count VON DER GOLTZ—six regiments (twenty-four squadrons); with the Ninth Corps, one Prussian and two Hessian regiments (twelve squadrons and six horse guns); with the Twelfth Saxon Corps, the Saxon Cavalry Division of General Count ZUR-LIPE—four regiments (twenty-four squadrons and six guns), and with each of the remaining four corps (Second, Third, Fourth and Tenth)—two cavalry regiments; the reserve cavalry of this army comprised the Fifth Cavalry Division of General Baron RHEINBABEN, five light and four heavy regiments (thirty-six squadrons and

twelve guns); and the Sixth Cavalry Division of the Duke of MECKLENBURG-SCHWERIN, two light and three heavy regiments. In all, the Second Army included 156 squadrons, or counting 150 horses to a squadron, 23,400 horses.

In the Third Army, under the Crown Prince of Prussia, each of the three corps (Fifth, Sixth and Eleventh), had two light cavalry regiments; the two Bavarian corps had four regiments of divisional cavalry and a cavalry brigade—in all, ten regiments (forty squadrons, twenty-four guns); and the composite Wurtemburg-Baden Corps had seven regiments, one of which was divisional cavalry, the other six being formed into two brigades, (twenty-two squadrons, twelve guns). The reserve cavalry of this army consisted of the Second Cavalry Division of General Count STOLBERG, (twenty-four squadrons, twelve guns), four light and two heavy regiments, and of the Fourth Cavalry Division, Prince ALBERT of Prussia, two light and four heavy regiments (twenty-four squadrons, twelve guns); the Third Army included, in all, 134 squadrons, numbering 20,100 horses.

At the beginning of the campaign of 1870, the French Army consisted of seven separate corps,* immediately subordinated to a single commander-in-chief, the Emperor NAPOLEON III. It was only after the unsuccessful engagements at Wörth and Saarbrücken that the division into two armies, forced by circumstances, followed. A cavalry division of two or three brigades was attached to each of the seven corps. The Guards kept their division. The reserve cavalry was formed of three divisions: The First, BARAIL'S, of four regiments of chasseurs d'Afrique (sixteen squadrons, twelve guns); the Second, BONNEMAIN'S, of four cuirassier regiments (sixteen squadrons, twelve guns); and the Third, FORTON'S, of two cuirassier and two dragoon regiments (sixteen squadrons, twelve guns). The Second Division was temporarily attached to the First Corps; the First to the Second Corps; and the Third to the Third Corps. In all, the French Army contained 220 squadrons, numbering 22,000 horses; they had against them the 354 squadrons, or 53,100 horses of the German cavalry.

From what has been stated in regard to the distribution of the cavalry, it is seen that in the French Army there was no cavalry under the immediate orders of the commander-in-chief, and it must be supposed that in battle, in order to form a cavalry reserve, it was always necessary to detach a few cavalry divisions from the corps. In the infantry divisions the French did not have as large a proportion of cavalry as the Prussians; but it appears to us that this was

*Exclusive of the Imperial Guard. (Translator's note).

not necessarily a drawback, as each corps commander could at any time detach a regiment from his cavalry division for service with the infantry and to cooperate with it in action.

The most noticeable use of the Prussian cavalry in the campaign of 1870, was at Mars-la-Tour, August 16th. A somewhat detailed analysis of this battle with respect to the part taken by the cavalry will therefore make it possible to ascertain the rôle which must usually fall upon this arm of the service in future battles. At the same time we may arrive at a conclusion, based upon this analysis, that the importance of cavalry in a modern battle is lessened, not by the ruinous small arms fire, but chiefly by a forgetfulness of the ~~fundamental principles observed by~~ the great leaders for the training of this arm in time of peace and for its use in battle.

On the 15th of August, 1870, the French Army was on the march from Metz to Verdun. The Third Reserve Cavalry Division, FORTON, (sixteen squadrons, twelve guns), and the First, BARAIL, (sixteen squadrons, twelve guns), explored the country in advance of the columns, which followed the roads through Mars-la-Tour and Conflans. At 8 o'clock in the morning, at Rezonville, General FORTON met two Prussian squadrons making a reconnaissance and which quickly withdrew to Puxieux. The French brigade of MURAT followed them. Near Tronville it was met by artillery fire and thereupon withdrew to Mars-la-Tour, where it rejoined the main body of the division. At Puxieux was the Thirteenth Prussian Cavalry Brigade of General REDERN, which was charged with making a reconnaissance of the road from Metz to Verdun, with the object of exploring the country to find the enemy. General REDERN had at his disposal, at about 11 o'clock in the morning, fifteen squadrons and two batteries. Subsequently, at the sound of the firing, he was reinforced by some cavalry, so that at 2 o'clock he had thirty-four squadrons. Considering it impossible to make headway against this mass of Prussian cavalry, General FORTON went with his sixteen squadrons to Vionville, where, soon afterwards, arrived the cavalry division of WALLBERG (sixteen squadrons), of the Second Corps. Both these divisions went into bivouac to the west of Vionville.

On the evening of the 15th of August, the French Army occupied the following positions in the vicinity of Metz (see plan): Headquarters at Gravelotte; the Second Corps (FROSSARD), in front of Rezonville, south of the highway; the Sixth Corps (CANROBERT), to the right of the Second, north of the highway; the Third Corps (LEBŒUF), three divisions between Verneville and St. Marcel; the Fourth Corps (LADMIRAULT), upon the road to Doncourt; the Guards

(BOURBAKI), at Gravelotte; the Cavalry Divisions of FORTON and WALLBERG at Vionville.

In conformity with the originally issued orders, it was intended to rise upon the following day, the 16th, at half-past 4 in the morning and continue the march. But upon the departure of the Emperor NAPOLEON from Conflans early on the morning of the 16th, the order of the preceding day was changed, and at the same time the corps commanders were informed that the movement would not begin before afternoon. On the Prussian side, the commander of the Second Army had already decided, on the 14th of August, to move as soon as possible to the other side of the Moselle.

On the evening of the 15th of August most of the corps of the Second Army completed the crossing of the Moselle, and the troops moving forward arrived at the following points: General ALVENSLEBEN'S Third Corps occupied a bivouac on the left bank of the Moselle at Pagny and Arnaville (about six and a half miles from Rezonville); of the Tenth Corps (General VOIGT-RETZ), the Nineteenth Division was at Thiancourt (about ten miles from Rezonville), and the Twentieth, at Pont-a-Mousson (about thirteen miles from Rezonville); the Prussian Guard was at Dieulouard (about twenty miles from Rezonville); the Fourth Corps arrived at Marbachs on the Moselle; the remaining corps were in the second line on the right bank of the Moselle.

In advance of the leading corps was the Fifth Cavalry Division, having brigades at Suzemont, Puxieux and Onville (about three and a third miles from Rezonville), and the Guard Cavalry at Thiaucourt, Bernecourt and Menil-la-Tour. The Sixth Cavalry Division, which was in observation on the front towards Metz, was found on the right bank of the Moselle at Coin-sur-Seille, covering at the same time the right flank of the Second Prussian Army. Thus, even on the 15th of August, the road from Metz to Verdun, the shortest line of retreat for the French army, was cut by the Prussian cavalry divisions, thirty-six squadrons, with twelve guns, while the Second Army had four corps on the Moselle, and three other corps not far behind them. From the reports received from the advanced cavalry, Prince FREDERICK CHARLES surmised that the French army was in full retreat to the Meuse, and therefore decided on the 16th of August to make a demonstration in the direction of the road to Verdun with two corps (the Third and Tenth) and two cavalry divisions.

On the morning of the 16th the Tenth Corps moved to St. Hilaire (about thirteen miles to the west of Rezonville), and the Fifth Division of the Third Corps was directed to make a reconnaissance

in force in the vicinity of Rezonville, where the enemy's camp had been observed the day before. The battle-field of the 16th of August lies to the west of Rezonville, south of the highway from Metz to Verdun. Between Gravelotte and the stream Yron the road lies upon an open and spacious plateau, bordered on the east and south by large and dense woods, which are especially thick on the upper parts of the slopes falling to the Moselle. Small groves spread out to the north from the highway along the so-called Roman road, and on this side form cover for the movement of the troops. From the remainder of the plateau, and especially from the summits of the sloping heights, a good view of the country can be obtained for a considerable distance on all sides. The rolling character of the country and some large depressions in which are situated the villages of Rezonville, Flavigny, Vionville and Mars-la-Tour, favor the secret movement, but do not impede the operations of cavalry. Of these depressions the most marked are the parallel valleys running — the one to the east of Rezonville, and the other through that village — both to the south; next in importance is a shallow ravine, beginning in the vicinity of Flavigny, which at first crosses the plateau in a southwesterly direction, and thence winds through the Bois de Gaumont to Gorze, forming the southern boundary of the battle-field.

A district of the same character lies between Tronville Heights and the plateau to the north of Bruville and St. Marcel. From the vicinity of Vionville to the Roman Road, there runs a shallow ditch, which becomes a deep ravine at the north edge of the Bois de Tronville and unites with the valley of the Yron to the north of Mars-la-Tour. The country north of the highway, Metz-Mars-la-Tour, is fully suited to cavalry operations.

About half-past 9 o'clock on the morning of the 16th of August, as the French troops were eating a hurried meal, they were startled by some shells which the Prussians let fly in the direction of Vionville. The fire was opened by the artillery of the Fifth Cavalry Division, which, with four batteries, supported by the Thirty-seventh Infantry Brigade at Chambley, approached to within 1800 paces of the lines of the French divisions of FORTON and WALLBERG without meeting a single patrol. Both divisions were formed at the alarm and withdrew in order to the north; in the confusion their baggage trains moved upon the Second Corps of FROSSARD, but the latter and the Sixth of CANROBERT, were by this time in order of battle. At 7 o'clock in the morning, the Sixth Cavalry Division completed the crossing of the Moselle at Corny, and preceding the Third Prussian Corps, moved upon Gorze. About half-past 9 in the morning, the

leading troops of the Sixth Cavalry Division established connection with the Fifth Cavalry Division; both divisions thus entered upon the engagement at the same time and coöperated with each other. In a sweeping semi-circle open to the northeast, they enveloped the skirt of the heights in front of Rezonville, from which the French infantry moved to the attack in diverging rays.

As there was no French cavalry at Rezonville at this time, the infantry moved quickly forward to drive the advancing Prussians from the heights. General FROSSARD immediately sent BATAILLE'S Division (Second Corps) in the direction of Buxieres, with orders to occupy Flavigny and Vionville; the division of VERGÉ (Second Corps) was directed to the south against the heights at Gorze; and farther to the left, making an angle with the last, the brigade of LAPASSET marched through the Bois de St. Arnould. The commander of the Sixth Corps, Marshal CANROBERT, also moved upon Vionville and Flavigny, placing to the right of the Second Corps his divisions of BISSON and LAFONT DE VILLIERS; the fourth division of the Sixth Corps (LAVOISIER-SERVAL) was posted in reserve to the east of Rezonville, in front of the Bois de St. Arnould, in order to guard against a turning movement from that side; and the First Division of the Sixth Corps (TIXIER) remained as yet in the vicinity of St. Marcel. Thus, in all, more than fifty battalions, with sixty guns, were deployed. Before this mass of French infantry, both Prussian cavalry divisions fell back.

About 10 o'clock in the morning the heads of the Fifth and Sixth Infantry Divisions (Third Corps) appeared upon the right flank of the cavalry; they came from Gorze and from the side of Tronville. The commander of the Sixth Infantry Division, while making a reconnaissance of the enemy, observed that the positions of Vionville and Flavigny were strongly occupied, and therefore decided, at half past 10 o'clock, to attack with all his forces (twelve battalions, twenty-four guns and one company); the divisions advanced by brigade to the right and moved with one brigade (Twelfth) on both sides of the road Mars-la-Tour-Rezonville, and the other (Eleventh), along the road to Tronville. Opposed to the Sixth Infantry Division were the leading troops of the divisions of BATAILLE and LAFONT DE VILLIERS, in all about thirteen battalions; behind them in the valley were scattered the remaining troops of both divisions. About half past 11 o'clock, after a strong preparatory fire from ninety guns, the Sixth Infantry Division possessed itself of Vionville.

The Fifth Prussian Infantry Division (thirteen battalions, twenty-four guns and one company) was moved from Noveant to Gorze and

arrived at the latter point about 10 o'clock in the morning; the two squadrons of dragoons marching at its head had scarcely ascended the plateau before they were met by a heavy fire. Immediately afterwards the division debouched from Gorze and was deployed in order of battle with the twenty-four guns in position. The French division of VERGÉ, of the Second Corps (thirteen battalions, eighteen guns), marching from the side of Rezonville, was also formed for battle; one of its brigades (VALAISE) moved across the open part of the plateau to the west of the Bois de Vionville and the other (JOLIVET) passed through the wood, issuing from its southwestern edge. Both French brigades made every effort to envelop the Prussian troops and sweep them from the plateau. The troops of the Fifth Infantry Division of the Prussians, pushing into the Bois de Vionville, engaged in a stubborn struggle with the enemy and gradually turned to the right to the Bois de St. Arnould, slowly but successfully pressing the French. The utmost exertions of this Prussian division for the crest of the height south of Flavigny, were at first unsuccessful and attended with great loss. It was only at 12 o'clock, with greatly reduced numbers and with their ammunition almost exhausted, that the left flank battalions succeeded in driving the French to Flavigny. The arrival immediately afterwards of a small reinforcement enabled the Fifth Prussian Division to move still farther forward and to complete the extension to the right. At midday it took such a position that its left flank was at the cross-roads Gorze-Flavigny and Buxieres-Rezonville, the centre at the corner of the Bois de Vionville, and the right in that wood. As both divisions of the Third Corps were separated from the beginning and their attacks made from different sides, the front of their battle order was very extended. It was more than four and a half miles long. Almost all the infantry and artillery were in the first line and in a fight against superior numbers were without hope of speedy reinforcement. To make up in some degree for the absence of reserves, it was decided to use the Fifth and Sixth Cavalry Divisions, in view of which the brigades of BARBY and BREDOW, in all twenty squadrons, were concentrated behind the Sixth Infantry Division, upon the west slope of the heights between Vionville and Mars-la-Tour, at 3000 paces from the skirmish lines, while both brigades of the Sixth Cavalry Division, in all seventeen squadrons, were placed behind the left flank of the Fifth Infantry Division, about 2000 paces from the skirmish lines. Both these cavalry masses stood concealed, about a mile and a quarter apart, ready at any moment to rush to the assistance of the struggling infantry.

From the heights of the Roman Road the French artillery so heavily cannonaded the Prussians occupying Vionville that it seemed necessary for the latter to assume the offensive. After a hot and long continued fight the Sixth Prussian Infantry Division succeeded in moving 1000 paces farther to the east, and seized the positions of the enemy at the groups of trees and upon the nearest heights. The French brigades of POUGET (Second Corps) and COLINY (Sixth Corps), which were east of Rezonville, were obliged to retreat. Notwithstanding their pursuit by two Prussian dragoon squadrons, stationed upon the left flank of the horse batteries, and moved by order of the commander of the Third Corps, the French withdrew *in good order*. The village of Flavigny was soon after attacked, from the south by the left flank of the Fifth Infantry Division, and from the west by the right flank of the Sixth Infantry Division. The attack was crowned with success, and the village was occupied. The broad arc with which the Prussians at first enveloped the Rezonville plateau was changed to the chord, and the extent of the battle order was thus somewhat reduced.

The right flank brigade of the Fifth Infantry Division, operating in the Bois de Vionville, also advanced successfully; at 1 o'clock it had gained possession of both the north border of the Bois de St. Arnould and of the western angle of the Bois de Vionville. Upon the open heights between the Bois de Vionville and the road from Buxieres to Rezonville stood thirty guns; somewhat to the left and rear, at the quarry, two light and three horse batteries of the Third Corps (thirty guns) filled the interval between the battle lines of both infantry divisions. The greater part of the Sixth Infantry Division marched at this time from Flavigny and along the Vionville high-road to Rezonville; the left flank regiment of the division carried on a hard fight between Vionville and the Roman Road; eleven batteries (sixty-six guns) were in position, part at the Vionville cemetery and part at the high-road to the northwest of that village.

Of the Tenth Prussian Corps, ordered at first to St. Hilaire, there was found as yet upon the battle-field only the Thirty-seventh Brigade, of which two battalions, one battery and two squadrons were attached to the Fifth Division at Gorze, and four and a half battalions, one battery and two squadrons, which had reached the Sixth Infantry Division through Chambley at 11 o'clock, were at Tronville, forming an insignificant general reserve of the whole battle order. After midday the second line of the Prussian order of battle consisted chiefly of cavalry. Nearest the infantry was posted its divisional cavalry, at a distance of about 1200 yards from the skirmish line, and grouped upon the flanks of the horse batteries of the Third Corps, as follows: To the right, and somewhat behind them, near the cross-roads Rezonville-Buxieres and Gorze-Tronville stood six squadrons; to the east of the ravine, at the quarry, three squadrons; behind the Vionville cemetery, three and a half squadrons. *At a distance of about 2400 yards behind the center of the Prussian* lines, southwest of the cross-roads Rezonville-Buxieres and Gorze-Tronville, were seventeen squadrons of the Sixth Cavalry Division in the ravine at the quarry.

The security of both flanks of the Sixth Infantry Division was assumed by the cavalry brigade of REDERN (Fifth Cavalry Division), six squadrons of which were placed upon the right flank; in the ravine to the southwest of Flavigny, and three squadrons at 1200 paces behind the left flank; twenty squadrons of the Fifth Cavalry Division were placed to the north of Tronville, with their right flank at that village; one regiment of the same division was detached 2400 yards to the north of Tronville, on the road to Bruville, to observe the French troops at St. Marcel. The Prussians thus had sixty-two squadrons upon the field.

Fearing to be cut off from Metz, Marshal BAZAINE paid especial attention to the strengthening of his left flank, and therefore placed in the second line, between Rezonville and Gravelotte, an infantry division of the Sixth Corps of CANROBERT, a brigade of Guard Cavalry, and still further to the east, at the "post" opposite the Bois des Ognons, the Guard Grenadier Division of PICARD, fronting to the south. Behind PICARD, upon the commanding height near Malmaison, DELIGNY'S division of guard voltigeurs was placed in general reserve. Thus, in the beginning, all the Guards and part of the Sixth Corps, *were placed upon parts of the battle-field upon* which an actual attack could not be made. To reinforce in case of necessity the Second Corps, FROSSARD, and the Sixth, CANROBERT, which occupied a defensive position 2400 yards west of Rezonville, the artillery reserve (ninety-six guns) was brought up and parked to the east of Rezonville; to the right of the artillery and somewhat to the east of the Rezonville-Villers road, was the cavalry division of FORTON (*sixteen squadrons, twelve guns*), *upon the left flank of* which was the cavalry division of WALLBERG (sixteen squadrons). This cavalry mass was about 1800 yards behind the center of the right flank of the French order of battle. But all these measures of Marshal BAZAINE could not arrest the advance of the Third Prussian Corps. The French Commander-in-chief was therefore impelled to draw from St. Marcel the division of TIXIER (thirteen battalions,

twelve guns), of the Sixth Corps, to occupy the groves north of the Roman road. The Marshal was also compelled to give orders for hastening the movement of the Third and Fourth Corps, which were to be established on the right flank of the order of battle. With the loss of Vionville, Flavigny, and the woods between, it was difficult for the French to hold the positions occupied, especially when there is taken into consideration the twenty batteries placed by the Prussians in the center, of which seventeen, *i. e.*, 102 guns, at a distance of about 2350 yards, concentrated their fire on the Second French Corps, which could reply with only seventy-two guns and eighteen mitrailleuses. The divisions of BATAILLE and VERGÉ, and the brigade of LAPANET, in all about 23,000, held out with difficulty against 29,000 Prussians so superior in artillery.

The result of all the fighting up to noon was the retreat of the division of BATAILLE and one brigade of VERGÉ's division. To relieve the Second Corps, Marshal BAZAINE had recourse to a cavalry fight. Nearest to Rezonville, at a distance of 1800 yards from the line of battle, were the Third Uhlan Regiment and the cuirassiers of the Guard. The uhlans moved forward, but soon turned back because the object of the attack had not been indicated to them. The cuirassiers, under command of General DE PREUIL, moved immediately after the uhlans. Having five squadrons, they were formed in three lines; in the two first lines were two squadrons each, and in the third line the Fifth Squadron.

The regiment was delayed by wagons of the train and other odds and ends of the camp, and in the very beginning fell into some disorder, but none the less attacked with rare bravery. The cuirassiers, first of all, met the Tenth Infantry Brigade of the Prussians to the east of Flavigny; the leading companies of the Prussians were deployed, and at 250 paces opened a rapid fire. The echelons of the French cavalry flew to the right and left; then the second rank of the Prussian infantry faced about and opened fire to the rear; fire was also opened from the flank by the Sixth Infantry Division of the Prussians; but the cuirassiers reached the batteries at full gallop, sabered the cannoneers, and then, weakened by losses, turned back. They lost twenty-two officers, 208 men and 243 horses.

The French cuirassiers were pursued by the Eleventh and Seventeenth Hussar Regiments of REDERN's brigade of the Fifth Cavalry Division, with three squadrons of the Eleventh Regiment as the leading echelon. In the pursuit the Eleventh Regiment broke through the retreating French infantry; at Rezonville this cavalry took a guard battery and surrounded Marshal BAZAINE, but was

checked by a battalion of chasseurs and two squadrons of the body guard standing near; the Prussian hussar regiments retreated to Flavigny; the Seventeenth Regiment, out of three squadrons, lost two officers, eighty-nine men and seventy-four horses; and the Eleventh Regiment, one officer, twenty-one men and eighteen horses.

As soon as the retreat of the Second French Corps was discovered, General VON ALVENSLEBEN sent orders to the Sixth Cavalry Division to advance in pursuit of the broken enemy. The transmission of the orders, the moving forward of the pursuing cavalry upon the heights, and the deployment of the division consumed considerable time. To relieve the Second Corps, BAZAINE at this time drew from Gravelotte the grenadier division of PICARD, which, traversing about two miles, deployed south of Rezonville sooner than the Sixth Cavalry Division succeeded in deploying. Thus when the latter, advancing about a mile, formed in order of battle and moved upon the plateau, it was met, not by the retreating enemy, but by the regiments of the French grenadier division, which, undisturbed and in perfect order, were awaiting it. The Sixth Cavalry Division was formed for the attack in the following manner: Upon the right flank, in the first line, was the brigade of RAUCH, and to the left, in echelon in the second line, the brigade of GRÖTER, consisting also of two lines, of which one regiment was in the first line, and two regiments echeloned behind both flanks, in the second line.

When the Prussian cavalry in the designated formation took the trot behind their artillery and wished to deploy in advance of it, there proved to be no room for the deployment without masking the artillery. The situation became still more complicated when the retreating brigade of REDERN passed through the already close intervals. In consequence, only part of the Sixth Division succeeded in deploying; most of the squadrons remained in squadron platoon columns, which, solidly closed between Flavigny and the road to Buxieres, took the trot to the road under a heavy artillery and small arms fire. The enemy's infantry hid in the neighboring cover and in the ditches of the road and directed a rapid fire against the mass of cavalry. Under these circumstances a continuation of the cavalry attack did not promise success. The Sixth Cavalry Division therefore halted, formed in order of squadrons and fell back upon Flavigny. In the meantime, the Sixth Infantry Division, marching along the road Mars-la-Tour-Rezonville, met serious resistance from the fresh forces of the enemy.

Upon the right flank of the French, at the Roman Road, to the north of and making an angle with the highway, Marshal CANROBERT

deployed a brigade of the third division of his corps, to the right of which was soon placed a brigade of the first division of the same corps withdrawn from St. Marcel. This deployment of new forces (about thirteen battalions) obliged the Sixth Infantry Division of the Prussians to abandon a further march on Rezonville and to form front to the north. The Thirty-seventh Brigade (of the Tenth Corps) was detained for some time at the northeast border of the Bois de Tronville. The short lull in the fighting of the Prussian infantry, due to the cavalry attack, made it possible to restore some degree of order to the Sixth and Fifth Infantry Divisions and at the same time to effect the above mentioned change of front.

In the meantime, reinforcements began gradually to arrive at the right flank of the French. About 2 o'clock, between St. Marcel and Bruville, were deployed to the right of the first division of the Sixth Corps (TIXIER), the divisions of NAIRAL (thirteen battalions, twelve gun, six mitrailleuses and one company), and of EMAR (thirteen battalions, twelve guns) of the Third French Corps; behind them the Fourth Corps of LADMIRAULT approached through Doncourt. Marshal BAZAINE, receiving a report of the uninterrupted movement of Prussian troops from the valley of the Moselle to Gorze, became especially fearful for his left flank; all the division of the Guard Voltigeurs found at the Gravelotte post-house was therefore directed to the Bois des Ognons and into the wood itself; its place was filled by the division of MONTAUBON of the Third Corps; to the south of Gravelotte were collected both of the disordered divisions of the Second Corps for the defence of the valley descending to the Ars. The weakening of the left flank and center of the Prussian army was not unobserved, and Marshal CANROBERT, having received reinforcements, decided to assume the offensive with all his troops in the direction of Vionville.

On the other side, by a continued advance, General ALVENSLEBEN succeeded in drawing upon himself four corps of the enemy, and compelled them to form front to him. With this progress he could be content; it was not necessary for him to do more, and the object now was not to be crushed by the superior forces of the enemy. It was 2 o'clock in the afternoon, and night was a long way off. The Prussians were all engaged, so that no infantry and not a single gun remained in reserve; the nearest reinforcements—the Twentieth Infantry Division—were still at a distance. Sixty-two squadrons of cavalry were at hand, however, and it was now necessary for them to save the infantry and thus secure the success of the day.

After a preliminary conference between the commander of the Third Corps and the chief of the Fifth Cavalry Division, the latter caused two brigades to secure the left flank of the corps, and placed the third brigade (BREDOW) at the immediate disposal of General ALVENSLEBEN. BREDOW's brigade consisted of two heavy regiments (Seventh Cuirassiers and Sixteenth Uhlans), and was on the left flank of its division, upon the northwest slope of the Tronville Heights, in a closed line of platoon squadron columns. In view of the approaching crisis and of the danger from the possible assumption of the offensive by the Sixth French Corps of CANROBERT, the commander of the Third Prussian Corps decided to make use of BREDOW's brigade to attack a French battery at the Roman Road, which was vigorously striking the Prussian infantry in the vicinity of Vionville.

By order of the division commander, two squadrons of BREDOW's brigade had been sent on a reconnaissance to the north just at the beginning of the movement. To conceal his advance, General BREDOW first ordered his six squadrons to change front to the east and then to break by platoons to the left in order to take advantage of a ravine to the north of Vionville. Proceeding a mile and a-half up the ravine, the regiments changed direction to the right, and ascending to the crest of the height north of Vionville, took the necessary intervals at a walk and deployed at a distance of about 2000 paces from the French batteries.

Under the strongest artillery and small-arms fire the brigade of BREDOW dashed upon the nearest body of the enemy, with the Seventh Cuirassiers on the left flank and the Sixteenth Uhlans on the right. Both regiments broke through the first French line and tore through the lines of batteries, cutting the harness and cannoneers. Nor could the second line of the French withstand this impetuous attack; the batteries on the heights lying behind were limbered up and withdrawn.

Carried away by success, BREDOW's squadrons crossed over the excavated road which descends from the Roman Road to Rezonville. After having charged over about 3000 paces they were stopped by the French cavalry, which came to meet them from all sides. MURAT's dragoon brigade of FORTON's division, attacked them in front; the squadrons of GRAMMONT's brigade attacked their left flank and rear; at the same time there came upon them from Rezonville the cavalry division of WALLBERG; in other words, the Prussian brigade of six squadrons was attacked and surrounded by thirty-two French squadrons. Having scarcely taken breath from the long continued gallop, and having lost fearfully from the firing, the Prussian squad-

rons had to beat a retreat, passing anew under the strong and indeed better aimed fire of the enemy. The French cavalry pursued weakly.

The brigade of BREDOW returned to Flavigny, having lost sixteen officers, 363 men and 409 horses, *i. e.*, more than one-half; but the charge gave the Sixth Infantry Division of the Prussians timely cover from the fire, and allowed it to somewhat recover itself. At the same time the attack begun by the Sixth Corps of CANROBERT was checked, probably by order of Marshal BAZAINE, who greatly feared for his left flank. At 3 o'clock, occupying positions fronting each other to the west and east, the battle was continued only by artillery fire, in consequence of the mutual exhaustion.

When BREDOW's attack was made, the cavalry brigade of BARBY of the Fifth Cavalry Division, in compliance with the given instructions, took upon itself the security of the left flank on the side of Bruville. Leaving to the right the Bois de Tronville, it passed through the deep ravine lying to the front, and was established on the other side of it, maintaining connection with the Thirteenth Dragoon Regiment (BREDOW's brigade), already found there, and observing the troops of the enemy at Bruville and St. Marcel. Nearest the enemy, on the south slope of the long ridge between Bruville and the Bois de Tronville, stood the Thirteenth Dragoons and a dragoon regiment of BARBY's brigade; behind them, in closed lines of platoon squadron columns, were both heavy regiments of the same brigade. The French troops of the Third Corps, which had approached to Bruville and St. Marcel, expecting, it seems, reinforcements on their way from the side of DONCOURT, limited themselves at first to a strong artillery fire against the Prussian cavalry, and carried on a sluggish fight with the Prussian infantry occupying the Bois de Tronville.

About a quarter to 3, when GRENET's division of the Fourth Corps arrived at Bruville, and prolonged the right flank of the Third, the French assumed the offensive with a dense line of skirmishers in front. The brigade of BARBY was soon under the fire of the enemy's skirmishers, who were concealed in the bushes, behind the hedges, and in the ditches; afterwards, covered with the bullets of the volleys fired from a distance of 600 to 800 paces and cannonaded by mitrailleuse fire from the rear, the Prussian cavalry began slowly to retreat in the direction of Tronville.

All the heavy fighting now fell upon the Prussian troops occupying the Bois de Tronville, which was attacked in front by two divisions of the Third French Corps, on the left by GRENET's division of the Fourth Corps, and on the right by the division of TIXIER of the

Sixth Corps; about fifty battalions in all moved upon this wood. The Prussian infantry of the left flank, in the ravine between Vionville and St. Marcel and also occupying the northeast corner of the Bois de Tronville, began a retreat to the high-road, suffering great loss. Pressed by the French, the left flank of the Prussians fell back upon the artillery collected to the west of Vionville. It was to be expected that at any moment the considerable forces of the French corps of the right flank, which were attacking so energetically, would burst forth upon the highway.

At this second critical moment of the battle, about four o'clock, the Twentieth Infantry Division of the Tenth Prussian Corps arrived at Tronville after a march of twenty-six miles. The arrival of the Twentieth Infantry Division on the left flank of the Sixth Infantry Division, supported the latter and made it possible to restore order to the Prussian troops so greatly disordered by the preceding fighting. Thereupon, the Twentieth Infantry Division moved forward, seized anew the Bois de Tronville, and forced the right flank of the Third French Corps to retire beyond the ravine to the north of the wood. The French troops of the right flank, from their positions on the Roman Road and upon the heights between the latter and the road from Bruville to Mars-la-Tour, threw case-shot and shells into the wood.

The arrival of fresh troops on the left of the Prussians and the energetic attack did not trouble Marshal BAZAINE, who continued to fear for his left flank. This he strengthened by the arriving reinforcements, and at 5 o'clock sent orders to the commander of the Third Corps (Marshal LEBŒUF) to stubbornly hold the occupied position in connection with the Sixth Corps (CANROBERT). This order and the news received by Marshal LEBŒUF of the advance of the Prussians through Hannonville upon Ville-sur-Yron, were probably the causes which arrested the further advance of the Third French Corps.

The force observed at this time by the French at Hannonville was the Thirty-eighth Prussian Brigade, which had moved upon St. Hilaire early in the morning. The First Guard Dragoon Regiment, a horse battery, and the Third Guard Cavalry Brigade (Count BRANDENBURG, Tenth Corps) with the brigade commander at the head, were detached from the infantry column still on the march, and moved to the east in the direction of the firing. Upon arriving in the vicinity of Mars-la-Tour, Count BRANDENBURG could observe the movements of the French troops in sight on the north. Advancing upon Ville-sur-Yron, the brigade commander saw, in the

vicinity of that village, a considerable force of French cavalry in complete inaction.

At that time, as the First Guard Dragoons were fired upon by the French troopers occupying the farm La Grange, the fourth squadron of the Second Guard Dragoons and the horse battery were sent upon the plateau in front of Bruville, whence the battery replied successfully for some time to the fire of the French artillery operating against the brigade of BARBY. The enveloping attack of the French upon the left flank of the Prussians, and the general retreat of the latter, begun about 3 o'clock, obliged Count BRANDENBURG to withdraw to Mars-la-Tour, where he placed his five squadrons and the horse battery under cover to the southwest of the village.

The Thirty-eighth Infantry Brigade of the Prussians was at first moved to the northwest to the Meuse below Verdun, where it was supposed the French army must have already passed. The brigade did not turn upon the firing, as from the information received from the cavalry the day before, it was surmised that there was only a collision of the Third Prussian Corps with the rear guard of the enemy at Mars-la-Tour.

When the Thirty-eighth Brigade was deployed to the south of St. Hilaire at the beginning of the first hour of the afternoon, there came an order from the commander of the Tenth Corps to move to the northeast of Chambley to reinforce the Third Corps. The brigade followed the high-road to Mars-la-Tour, which would lead either to the left flank of the battle order or to the flank or rear of the enemy.

Approaching Suzemont about 4 o'clock, and re-forming in order of battle, the Thirty-eighth Brigade was directed to Tronville; the Guard Dragoons were charged with supporting the batteries. While approaching the height at Tronville, the brigade continued the movement to Mars-la-Tour, where it was swept by shells from the height to the northeast. Northeast of Mars-la-Tour, forming in a bow-shaped order of battle, the brigade closed by the left flank to the road from Mars-la-Tour to the farm Greyère, and attacked the heights at Bruville. Six batteries of the Tenth Corps were posted north of the high-road, between the Bois de Tronville and Mars-la-Tour.

A considerable force of cavalry was stationed in readiness at Tronville; here were collected the brigade of BARBY, three regiments; the brigade of BREDOW, one regiment, and the dragoon regiment of the Twentieth Infantry Division. North of Puxieux was the hussar

regiment of REDERN's brigade, and southeast of Mars-la-Tour, a Guard Dragoon regiment. The Fifth Squadron of the Second Guard Dragoon Regiment patrolled the road to Etain; the Fourth was with the horse batteries upon the left flank of the Thirty-eighth Brigade.

The right flank of the French upon the Bruville plateau, comprised at this time a division of the Fourth Corps (LADMIRAULT), having part of the Third Corps to the left, and the division of TIXIER of the Sixth Corps farther to the east. There was also a considerable body of cavalry to the north of the farm Greyère to secure the right flank of the French. The commander of the Second army, Prince FREDERICK CHARLES, arrived upon the field at 4 o'clock, while both sides were upon the defensive; the Prussians at the points occupied by them at mid-day, and the French, in position upon the heights surrounding Rezonville. The passive attitude of the Prussians resulted from the lack of strength; that of the French, from the fear of their commander-in-chief for his left flank. This fear was also the principal reason for Marshal BAZAINE's refusal to bring into action his numerous reserve for a decisive attack upon the left flank of the Prussians.

Prince FREDERICK CHARLES, having acquainted himself with the situation of affairs, decided to continue the defensive in the center and upon the right, and to assume the offensive with the left flank, on which the troops of the Tenth Corps had already arrived.

The Prussian artillery of the right flank and center was strengthened by a few batteries and kept up an uninterrupted, though moderate fire. A few partial attacks undertaken from one or the other side did not change the situation of the adversaries up to 5 o'clock. The Thirty-eighth Infantry Brigade had scarcely succeeded in deploying at Mars-la-Tour, when it immediately made an attack which was repulsed by the French divisions of GRENET and CISSEY. The French right flank, with a numerous cavalry behind it, assumed the offensive and pursued the Thirty-eighth Brigade almost to annihilation. About 6 o'clock, General VON RHEINBABEN and Count BRANDENBURG received orders to attack in order to save their left flank.

The First Guard Dragoon Regiment, stationed southeast of Mars-la-Tour, nearer than the others to the enemy, immediately moved forward at a trot, in platoon columns, making its way to the road in order to attack the right flank of the French infantry. The frequent hedges crossing the country to the northeast of the village and the enemy's fire delayed the attack of the regiment, and hindered its deployment. Deploying three squadrons in line, and leaving the fourth in reserve at Mars-la-Tour, the regimental commander rushed

with his troops upon the enemy. To the right of the regiment two squadrons of the Fourth Cuirassiers advanced to the attack, but put about without attaining their object, swept by a mass of the enemy's bullets.

The attack of the Guard Dragoons was crowned with success, and the Thirteenth Line Regiment of the French right flank was trodden down, the other troops of that flank discontinuing the advance; some of them stopped, the others turned back. The Guard Dragoons lost seven officers, 125 men and 250 horses. Thanks to this attack, the Thirty-eighth Brigade had time to recover itself. Almost simultaneously with the attack of the Thirty-eighth Brigade, and while covering it upon the left flank, the fourth squadron of the Second Guard Dragoons, with a Guard horse battery, advanced by the high road upon Jarny. The battery ascended the nearest commanding height and opened fire against the groups of horsemen which appeared to the north of the farm Greyère; afterwards it went forward to the crossing of the highway with the road from Ville-sur-Yron. As soon as the battery unlimbered and opened fire against the French infantry approaching from the side of the farm Greyère, it was attacked by a regiment of chasseurs d'Afrique. This attack was repulsed by the Guard Dragoons and a dragoon regiment of BREDOW's brigade, sent to their rescue.

Notwithstanding the enemy's infantry fire from the nearest ravine, the pursuit of the French chasseurs was continued to the heights of Ville-sur-Yron, where the Prussian cavalry was obliged to stop on account of the appearance of a mass of French cavalry. This was the cavalry collected by General LADMIRAULT to secure his exposed right flank; in the first line there were in all six regiments, twenty-four squadrons, viz: Two hussar and one dragoon regiment of LEGRAND's division of the Fourth Corps; two chasseur regiments of DU BARAIL's division; and the brigade DE FRANCE, composed of the uhlan and dragoon regiments of the Guard. The greater part of CLERAMBAULT's division of the Third Corps, moved by Marshal LEBOEUF upon Bruville, formed the second line of this cavalry. When the Thirty-eighth Prussian Brigade attacked the height at Bruville, the six cavalry regiments above mentioned were stationed between the farm Greyère and the village of Bruville, upon the eastern side of the valley; afterwards, by order of Marshal LADMIRAULT, still fearing for his right flank, this French cavalry crossed the open plateau Ville-sur-Yron for a decisive operation against the left Prussian flank. First of all the regiment of chasseurs d'Afrique crossed the valley, and when it attacked the Prussian horse battery,

the three regiments of LEGRAND's division (twelve squadrons) followed the same road; somewhat to the right of them moved the Guard Cavalry Brigade (DE FRANCE); inclining afterwards to the left, the regiments were formed in several lines, with echelons from the left flank, fronting to the south. The first line comprised the hussar brigade of MONTAIGNE, which was deployed at Jarny. All the Prussian cavalry between Tronville and Puxieux (twenty-one squadrons) moved to meet the French cavalry. After crossing the high-road Mars-la-Tour-Verdun, the Prussian cavalry was deployed in two lines to the northwest of Mars-la-Tour; in the first line was the brigade of BARBY (three squadrons of the Thirteenth Uhlans, two squadrons of the Fourth Cuirassiers and four squadrons of the Nineteenth Dragoons), and in the second line, the Sixteenth Dragoons and Tenth Hussars; all the regiments in closed lines of platoon squadron columns.

The Thirteenth Dragoons, having just repulsed the chasseurs d'Afrique, observing the approach of this mass of French cavalry, turned somewhat to the right in order not to expose their flank, and forming front, galloped upon the hussar brigade of MONTAIGNE, which also moved to the attack. The movement of the Thirteenth Dragoons to the right somewhat disordered them, and therefore, at the time of the collision, the French hussars passed rapidly through the wide intervals of the dragoons, but afterwards, met by the timely arriving Prussian hussar regiment, were driven back. Immediately after this cavalry fight was entered upon, General BARBY arrived at the place of collision with the remaining regiments of the brigade, which, however, from insufficient space, could not be deployed in one line. The cuirassier squadrons therefore followed in two platoon columns behind the center of the line; to the right of them moved the Sixteenth Dragoons.

About a quarter to 7 o'clock in the evening there occurred almost simultaneously a general and decisive collision of the cavalry masses along the entire front, as far as was permitted by the breadth of the place, which was 2500 paces. On both sides there was an inclination to envelop the flanks, but the ground was unfavorable, especially in the case of the French cavalry, which outnumbered the Prussians. General DE FRANCE, with the object of supporting the first line, which was wavering, approached to within 150 paces of the Nineteenth Dragoon Regiment of BARBY's brigade, and attacked it with the uhlans of the Guard; but the French brigade of the second line was already enveloped by the Thirteenth Uhlan Regiment of BARBY's brigade, and at the same time was attacked by the Fifth Squadron of the

Second Guard Dragoons, which, returning from its reconnaissance and observing the cavalry fight, passed the bushes and ditches at full speed and struck the flank and rear of the enemy.

The Chasseurs d'Afrique again rallied and attempted to support the Guard Brigade, but a wedge was driven into the French cavalry mass from the front by the cuirassiers of BARBY'S brigade, and the Sixteenth Dragoons attacked anew in flank and rear. Soon a thick cloud of dust appeared in the north; the entire mass of the French cavalry was moved back to the crossing of the ravine upon Bruville, but in that place were stationed five regiments of the cavalry division of CLERAMBAULT, who, observing the progress of the fight, had sent one brigade across the ravine. The retreating French cavalry rushed upon this brigade of CLERAMBAULT'S division going to its reinforcement, threw it into disorder, and carried it along in the general current to the rear. The Second Brigade of CLERAMBAULT'S division succeeded in crossing the ravine and was deployed to the west of it, but did not seek to penetrate further.

Meanwhile the dismounted troops of the Chasseurs d'Afrique occupied a grove at Ville-sur-Yron and opened fire upon the Prussian cavalry; the French infantry at the farm Greyère also opened fire, whereupon all the Prussian cavalry, under cover of the Thirteenth Dragoons, slowly retired to Mars-la-Tour. After it followed one squadron of CLERAMBAULT'S division.

At this time, under cover of the cavalry, the remnants of the Prussian Thirty-eighth Infantry Brigade were collected and placed in bivouac southwest of Tronville, upon the road to Buxieres; the Bois de Tronville was again occupied by the Prussians of the Twentieth Infantry Division. Upon the right flank of the Prussians also the fight was continued after the approach of twilight, as the Prussian troops there, weakened by the day's battle, were more and more strengthened by the reinforcements approaching from the Moselle. At 7 o'clock, when the firing on the east was increased and the reports received permitted the speedy arrival of the Ninth Prussian Corps to be counted upon, Prince FREDERICK CHARLES considered the time most favorable for passing to a general attack. Two brigades of the Sixth Cavalry Division received orders to coöperate in a general attack upon the French center.

It was already dark when the brigade of GRÜTER, comprising thirteen squadrons, formed in line of platoon squadron columns with full intervals, moved on Rezonville along the road from Buxieres; two squadrons of the Third Uhlans formed the first line, three squadrons of the Sixth Cuirassiers were echeloned to the left, and the

Twelfth Dragoons advanced on the right. The hussar brigade of Colonel SCHMIDT (RAUCH'S) having arrived from the vicinity of Tronville, was also deployed; the Sixteenth Hussars were upon the right flank of the first line and the squadrons of the Ninth Dragoons were in the second line, in echelon from the left flank. Passing along in this order to the north of Flavigny, Colonel SCHMIDT also was directed to Rezonville. The attacks of the brigades of the Sixth Cavalry Division were made with great wickedness, but were attended with considerable loss and were unproductive of satisfactory results.

The superior strength of the French army soon forced Prince FREDERICK CHARLES to desist from offensive operations, and to limit himself to holding the positions occupied by the Prussians between the Bois des Ognons on the right flank, and the Bois de Tronville on the left. The loss in killed and wounded amounted to about 16,000 on each side.

The Prussian cavalry taking part on this day lost:

	Killed.			Wounded.			Missing.			Total.		
	Officers.	*Men.*	*Horses.*	*Officers.*	*Men.*	*Horses.*	*Officers.*	*Men.*	*Horses.*	*Officers.*	*Men.*	*Horses.*
Third Guard Cavalry Brigade...	12	29	312	7	155	49	1	16	.....	20	200	361
Fifth Cavalry Division.....	14	166	429	46	588	137	2	76	336	62	830	902
Sixth Cavalry Division	6	75	214	13	173	116	1	26	24	20	274	354

What first of all attracts attention in the battle of Mars-la-Tour is the disposition of the entire mass of the Prussian cavalry at a distance of 2000 to 3000 paces behind the firing lines, *i. e.*, upon the line of special reserves. Notwithstanding the strongest fire of the enemy, the Prussian cavalry knew so well how to take advantage of the ground that it stood behind the lines during the entire battle without loss.

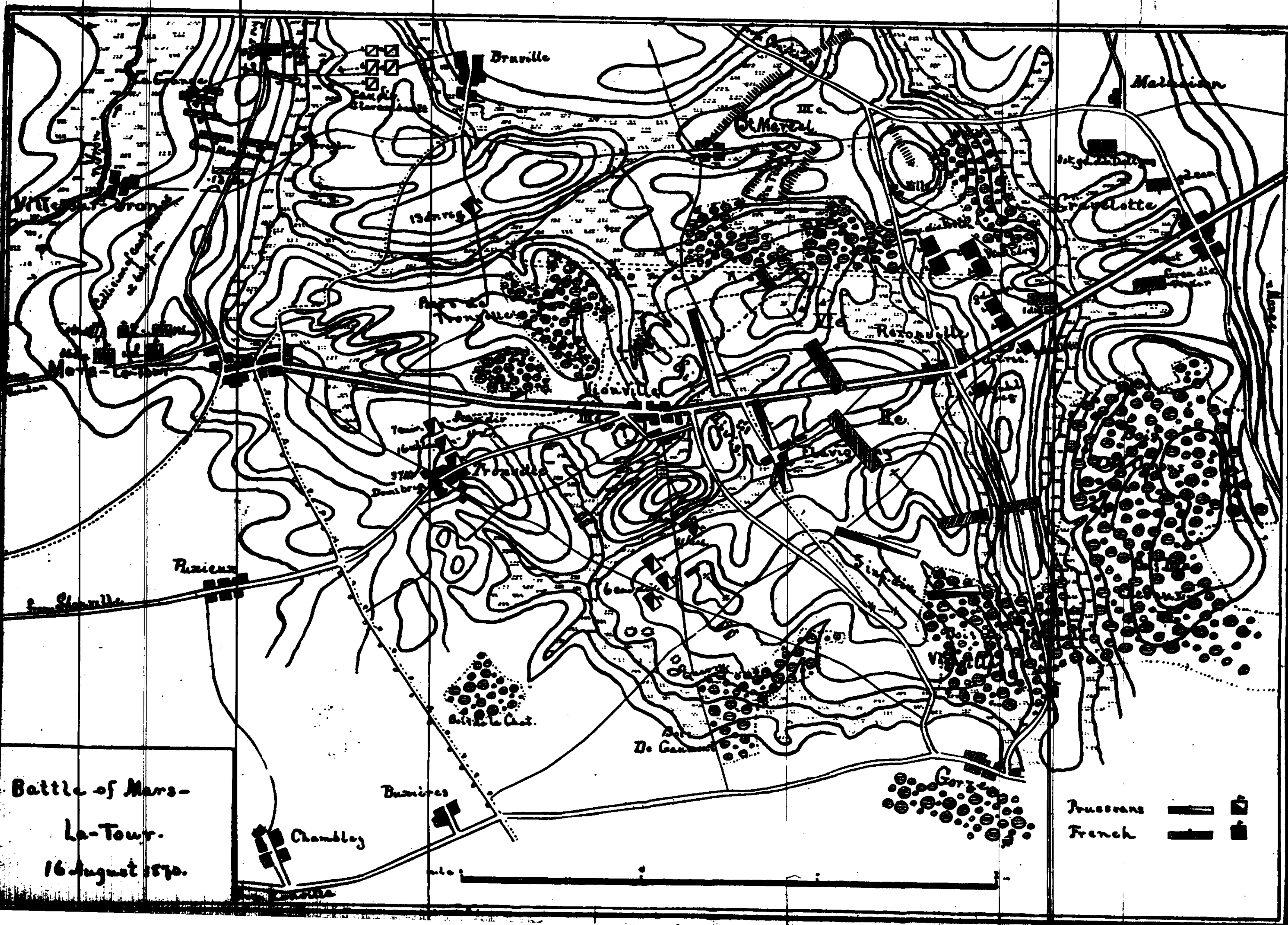
By such a removal of the cavalry from the firing lines, it can many times take an active part in the fight, but only on condition that the commander understands the situation of the battle and the function of his own arm in action. In comparison with the activity of the Prussian cavalry at Königgrätz, one is struck by the absence of the independent participation of the divisional cavalry, the regiments of which, divided into squadrons, either screened the artillery, already secured by the firing lines in front and their supports, or made an attack in conjunction with the troops of the cavalry divisions.

The separate cavalry divisions of the Prussians took a great part in this battle, although without properly harmonizing their operations with those of the infantry, and with the rare appearance of independent initiative. One of the reasons for the latter was the absence of a chief of cavalry who could follow the progress of the fight and direct the operations of the cavalry with a view to the attainment of the common end. When the Prussians had made use of all the reserves, it was hardly right to hold the Fifth and Sixth Cavalry Divisions in two groups behind the center and left flank; it would seem as if better results might have been obtained by the concentration of all the cavalry behind the left flank, in order to be in readiness for operations against the right flank of the French; the conditions of the ground were moreover favorable for this.

The time for making the attack against the French center with the Sixth Cavalry Division after noon, was lost in consequence of the slowness of the cavalry in maneuvering; this attack cannot be acknowledged to have been opportune for the reason that after deploying, the Sixth Cavalry Division masked its batteries, and while moving upon the enemy's center might have been subjected to a cross-fire; in addition to this, under the existing situation of the battle, it was difficult to look for any important result from this attack. The dispatch against the whole Sixth French Corps, of the six squadrons of General Bredow with the object of checking the enemy's advance, was, in our conviction, an aimless action, and one which could not produce any corresponding result; it would have been quite different if all the cavalry of the left flank (more than twenty squadrons) had gone to the attack. That the Prussian Third Corps was not swept from the field of battle, thanks are due only to the stubborn fear of Marshal Bazaine for his left, and to his reiterated orders to the commander of the Sixth Corps (Canrobert), not to attack with the right flank, and not in consequence of the attack of Bredow—brilliant from the point of view of a cavalry charge.

The absence of a chief of cavalry is especially noticeable in connection with the collision of the cavalry masses upon the plateau Ville-sur-Yron, where the Prussian cavalry again failed to show great readiness in maneuvering. The attack of the French center by the Sixth Cavalry Division at 8 o'clock in the evening was more than aimless—harmful with respect to its cavalry, which incurred heavy losses without gaining any advantage.

In comparing the operations of the Prussian cavalry at Königgrätz and Mars-la-Tour, one cannot fail to observe that it was much improved in respect to its part on the field of battle. It is probable



Bruville
Malmaison
St Marcel
Gravelotte
Rezonville
Vionville
Flavigny
Tronville
Mars-la-tour
Puxieux
Bois de la Chat
Gorze
Buxières
Chambley
Prussians
French
Battle of Mars-La-Tour. 16 August 1870.

that in future campaigns, thanks to correct training in time of peace and to the efforts to develop as far as possible the coöperation in battle of the cavalry with the other arms of the service, its participation in action will be still wider and more in accordance with its functions, and will call forth no reproaches from the infantry and artillery, for insufficient support upon the battle-field.

[TO BE CONTINUED.]

SMOKELESS POWDER IN ITS RELATION TO CAVALRY EFFICIENCY

By Major MOSES HARRIS, Eighth Cavalry.

PROGRESS in methods of war keeps pace with the civilization of the age. All arts and sciences are made subservient to success, and every passing year adds to the complexity of the various problems presented to the military student for solution. Each new invention increases the mass of material which the intelligent soldier must examine, classify and utilize, as best he may, for the discomfiture of his enemy. It devolves upon each arm of the service to exercise watchful care to the end that no means which the progress of the age renders available shall fail to contribute to its improvement and efficiency.

There are those who believe that, for the cavalry, improvement in fire weapons and other progressive inventions have no significance beyond the necessity for sharper spurs and sabers, and increased boldness in riding straight upon the enemy; those who believe that cavalry is a projectile, and nothing more, to be discharged against the opposing ranks of the enemy, under the directing power of its general, as the artillerist sends his shot and shell; those who believe that the ability to ride in the charge, boot to boot, in serried lines, like the cavalry of Seidlitz and Ziethen, constitutes all there is of cavalry efficiency. And it must be acknowledged that there is much to recommend this view. When we turn back the pages of history and note the pitiable condition into which the cavalry of the Sixteenth Century had fallen in its efforts to make use of fire weapons, and contrast its efficiency with that of the same arm in the two following centuries, first under the great Gustavus, and later under that incomparable soldier, Frederick II. of Prussia, it would seem that the futility of attempting to combine the functions of two arms in one had been fully demonstrated. On the continent of Europe

there appears to have been no dissent from this view until within very recent years; Russia, where the conditions of progress bear some resemblance to those of our own country, being the only great power that has made any decided attempt to develop and perfect the dismounted efficiency of its cavalry.

In the foundation of this republic, on the basis of human equality and freedom, the American people threw off the trammels of old world theories and traditions and asserted their right to prove all things that they might hold fast that which was found good. This principle has guided the development of our military power, and has especially directed the growth and education of the cavalry arm.

Our cavalry owes its origin to the necessity of protection to civilization in its westward march across the American continent; and in its prolonged contest with the warrior tribes of the border versatility of resource was of spontaneous growth. Stratagem was met by stratagem, and the trooper was equally at home in his weary tramping through the Everglades of Florida, in the stealthy night-march and daylight attack on his murderous foe, or in the wild charge against the mounted warriors of the western plains. The war with Mexico gave opportunity to test the value of the unique training that our cavalry had received with a foe who, if wanting in some of the characteristics of a high civilization, was yet in possession of a magnificent cavalry. A force unexcelled in horsemanship, and skillful in the use of the oldest and most characteristic cavalry weapon—the lance. Our squadrons not only asserted and maintained their superiority over this force in every instance in which it was encountered, but attested the efficiency of their dismounted action in almost every engagement from Vera Cruz to the City of Mexico. The service rendered by the cavalry during the War of the Rebellion is too well known to require amplification here. Murfreesboro, Chickamauga, Nashville, Gettysburg, Winchester, Cedar Creek, Dinwiddie, Sailors' Creek and Appomattox are some of the names that bear witness to the fidelity with which it adhered to its early training, and its ability to adapt its methods of fighting to the varying conditions of war. The fact that the cavalry of this period was largely a volunteer force does not affect the conclusions that may be drawn, for it was faithfully modeled after that of the regular establishment, relying on its teachings and following with confidence its methods.

This allusion to the past history of our cavalry has been made to give emphasis to the fact that it is not bound by the traditions and beliefs of the old world, and in seeking to increase its efficiency by

making use of all improvements in fire weapons, in both mounted and dismounted action, it is simply following out the law of its development. If smokeless powder is to give increased power to fire action, the cavalry will fail in its duty unless it claims the right to utilize that power to the utmost in its fighting methods.

That the power of cavalry against cavalry lies in the skill of its leaders, the impetuosity of its charge, and the individual prowess and training of its troopers will not be disputed. If fire action, mounted or dismounted, is not compatible with the retention of this power it must be discarded, or the squadrons will be driven ingloriously from the field. The cavalry leaders of France and Germany doubtless recognize this fact, and believing, as they do, that their cavalry is incapable of combining fire action with effective charging power, are justified in doubting the wisdom of introducing fire-weapons into its ranks. Opposed to cavalry that is efficient both in charging power and fire-action, it would be placed at a fearful disadvantage; but that is a matter with which we are not concerned. Our experience justifies us in believing that such efficiency is not unattainable, and thus improvement in fire-arms and explosives has for us increased significance.

There has never been a time since the invention of gunpowder that the future of the cavalry has not appeared to some extent uncertain. To weak-hearted theorists every increase in the destructive power of fire weapons has seemed to forebode the extinction of the cavalry. When rifled fire-arms were invented it was believed that it had no longer any place on the battle-field, and when it refused to retire into obscurity, but persisted in charging infantry lines, in the face of mathematical demonstration that sure destruction would follow, the advent of the breech-loader was looked upon as a definite and final settlement of the controversy. The answer was Vionville, where the bold and well-led charge of six squadrons saved an army from disaster.

It cannot, however, be denied that the Franco-Prussian War affords many examples of failure in well led cavalry attacks, and that many able officers were convinced, from the experiences of that war, that cavalry should not, except in extreme cases, be employed to charge unshaken infantry armed with breech-loaders. As a result of that war, France was left smarting under a sense of humiliation and defeat, but with her military resources not permanently impaired. The recuperative power of a proud and courageous people was shown in the payment of the vast indemnity exacted, and the prompt reorganization of the armies of the Republic. For twenty

years she has kept watchful guard upon her enemy, keeping pace, step by step, with his advance in the military art. The result of this rivalry has been such progress during years of peace as is usually unattainable except through the experiences of war.

The most important event in this era of military activity has been the advent of a new explosive adapted to use in cannon and small arms; the dense smoke caused by the burning of the ordinary black powder, as well as the fouling of the piece by the deposit of residuum, were disadvantages in its use that had long been felt. Manufacturers of explosives and experimenting chemists the world over had searched long to discover ingredients that might be combined to produce a smokeless explosive, adapted to military uses. This search was stimulated by the announcement, in 1885, that an explosive known as melinite had been produced in France that fulfilled the required conditions, and no efforts or expense have since been spared by other military nations to attain corresponding results. The measure of success that has been reached appears to be still uncertain, but it is doubtless an established fact that such an explosive will in future be used, to the exclusion of the ordinary gunpowder.

The qualities of this explosive with which we are concerned, as affecting the tactical use of cavalry, are its smokelessness, comparative freedom from noise, and superior ballistic qualities.

An instructive article in the *Journal of the Military Service Institution* for July, 1892, in comparing the different smokeless powders, gives preference to the Maxim powder, one formula for its manufacture being given as follows: Gun cotton, fifty per cent.; nitro glycerine, forty-eight per cent.; castor oil, two per cent. This powder is said to be absolutely smokeless; that is, its products of combustion are entirely gaseous, and a velocity of 2000 feet is imparted to the bullet of a small arm adapted to its use. Although not entirely noiseless, the volume of the report is said to be much reduced, and inaudible at 600 yards.

It is evident that the use of this powder will render the duties of reconnaissance and outpost vastly more difficult, as has been pointed out by many recent writers. With the old powder, at the firing of the first shot, the location of the enemy was declared. A reconnoitering party gained important information by the first effort of the enemy to prevent its approach. With the new explosive, the commander of a party may see his men falling about him and have no intimation of the position of his foe, since the new rifle may be used with deadly effect far beyond the audible limit of the report. The advantage will ordinarily lie with the one who first discovers his

enemy. The sentinel on outpost will have the advantage if, concealed himself, he discovers the approach of a hostile party; otherwise, he may be picked off without the immediate knowledge of the support. Outposts have the advantage of concealment, but to retain this advantage great vigilance is required; otherwise, a hostile force, being able to choose the time and methods of approach and reconnaissance, may surprise the outposts and carry confusion and disaster into the camps of the less enterprising adversary. With the advent of this new force into modern war, vigilance and activity seem to have acquired, under all possible circumstances, increased significance and value.

The absence of smoke from the battle-field, without reference to other considerations, seems to add to the difficulties of cavalry attack on infantry lines. It is true that the unobscured view of the battle-field will enable the watchful leader to take advantage of favorable features of the terrain, to note the weak points of the enemy's line, and thus to take advantage of favorable opportunities for attack. But, on the other hand, the clear range of vision on a smokeless field will enable the infantry to pour in its fire with greatly increased accuracy and destructiveness.

The opinion has been expressed, that the absence of smoke will increase the moral effect of the charge; that the infantry soldier, as he observes the swift advance of the rushing squadrons, will be stricken with terror, and will find it impossible to resist the impulse to leave the way clear. This opinion does not inspire confidence. Obscurity is favorable to doubt and fear. It is the unknown that terrifies. The soldier, shrouded by the smoke of battle, gives play to his imagination, until, finally, glimpses of advancing hosts, and the mighty thunder of the hoofs, result in wild panic and flight. The clear light of day removes all deception, and the soldier, as he observes the destructive effects of his deliberate and well aimed fire, acquires confidence in himself and in his weapon.

To sum up: The absence of smoke and comparative noiselessness of the new explosive, seem to favor concealment and secrecy of movement, while the freedom from smoke on the battle-field gives greatly increased effect to small-arms fire. The offensive force derives some advantage by the opportunity given to study and make use of favoring terrain, but upon the whole, the balance of advantage must be conceded to the defense. As the power of cavalry lies in the offensive, its effectiveness must suffer from the smokeless and comparatively noiseless character of the new explosive, unless it shall be able to gain some compensating advantage by adapting it to its own uses.

It is, however, in the ballistic qualities of the new powder that its truly formidable character is perceived. Lieutenant WISSER, in the *United Service* for February, 1891, referring to the use of smokeless powder in the German rifle, model of 1888, says: "The initial velocity of the projectile is about 2034 feet per second, and its trajectory is so flat that when firing with the 500 metre (nearly 550 yards) sight, it rises at its highest point only 4.9 feet (less than the height of a man) above the line of sight. At 300 metres (328 yards) it perforates iron plates .28 inch in thickness; at 800 metres (875 yards) fir wood ten inches in thickness. At 100 yards it can therefore penetrate four or five men; at 400 yards, three or four men; at 900 to 1300 yards, two or three men. Earth must be at least thirty inches thick to afford protection, and if several projectiles strike, in succession, the same point of a brick wall, they will pass through."

It is evident that this enormous increase in fire effect adds greatly to the difficulties of a cavalry charge against infantry. With the curved trajectory of the old rifles it was difficult for the soldier to adjust the sight of his rifle to the rapid advance of the charging force, and the danger to the horsemen did not become great until they were within about 300 yards of the enemy's line, a distance that could be passed over in about thirty seconds. Now, however, with this very flat trajectory, the trooper will find himself within the dangerous space when at 800 or 900 yards from his enemy; a distance that requires about ninety seconds to cross. And it is reasonable to believe that the fire of the infantry over this whole distance will be far more deadly than any ever before experienced, as the vision of the soldier will be unobstructed, while no adjustment of the sights will be needed; the only requisite being that the men keep their rifles pointed at the hoof line of the advancing squadrons, and fire away with all possible vigor.

Of course it can be demonstrated that with equal force opposed, men and horses would all be killed many times over while passing through this deadly space. We catch a fleeting glimpse of encouragement in the reasonable doubt which we may have, knowing as we do the vitality and staying powers of a horse in full career, as to the stopping effect of those little steel covered pellets. The cavalry soldier also is sustained by the excitement of the moment, and being carried along by his horse without especial effort of his own, wounds that would drop an infantry soldier instantly are hardly noticed till the charge has spent its force. But, at the best, the outlook is not cheering, and the only real consolation we find is in the knowledge

that our chances for successful attack are quite as good as those of the infantry.

Including the necessary halts for firing, it will take the footman at least fifteen minutes to pass over the ground that the horseman covers in a minute and a half. At the distances prescribed by the present Drill Regulations, the penetrative power and flat trajectory of the new rifle place the firing line, the supports and reserve, in almost equal danger, within the limit of distance that we are considering, and the increased density of the infantry attack formation over that of the cavalry causes it to present to the enemy's fire a living target surface fully equal in extent. If we do not consider the fire effect of the attacking infantry, it would thus appear that the cavalry attack has ten chances of success to the infantry's one, and it may be fairly doubted if the fire action of the infantry makes good this disparity.

It is probable, however, that in future wars such attacks will seldom be made by either cavalry or infantry. The last great invention of smokeless powder has completed that modification in tactics that was foreshadowed by the last year of our Civil War and the Russo-Turkish War of 1877–78. In these wars the spade became a weapon. The opposing forces covered themselves by intrenchments. Direct attacks were successful only after immense losses that were almost equivalent to defeat; and flanking movements that threatened the enemy's line of supply were alone relied upon to move him from his chosen position. The "Six Weeks' War" of 1866, and the French and German War of 1870–71, were both somewhat exceptional in their character. In the first named, the Germans had not only the advantages of splendid discipline, fine organization, and the directing wisdom of a VON MOLTKE, but also that of a superior weapon. In 1870, the rapid mobilization of the German armies (due to an incomparable organization), the ability of the generals, the discipline and soldierly spirit of the rank and file, placed the brave but undisciplined forces of France, poorly organized and badly commanded as they were, in a hopeless condition of inferiority from the beginning of the war. In neither of these wars did the side thrown upon the defensive make any systematic or proper use of field intrenchments. On the side of the Germans, the overwhelming moral superiority of their armies made the use of intrenchments, in both instances, comparatively unnecessary. In striking contrast was the action of the Turkish forces when opposed to the Russians in 1877–78. Although the disparity in strength and morale was far greater than in either of the two previous wars, by

a judicious and persistent use of field intrenchments, the unequal struggle was prolonged for nearly a year.

Germany, through the prowess of her armies, is very justly acknowledged to be the leading military power. For a score of years her writers have given the tone to all military literature. Her methods and tactics have been copied, to some extent, by nearly all nations; and it is believed that her want of experience of the value of the spade as an implement of war has tended to weaken the just appreciation of its importance which our own experience, and that of Russia, demand. That the lessons taught in the Russo-Turkish struggle, and in our own war, have not, however, been entirely lost sight of, is shown by the fact that nearly every civilized nation except our own has adopted an intrenching tool as part of the personal equipment of its soldiers. And so, to get back to our subject, we may believe, notwithstanding all that is written about front attacks, and cavalry charges against infantry lines, that, in the future, battles in which both sides are not covered by some kind of intrenchments will be increasingly rare.

What, then, is the role of the cavalry under these new conditions? There will probably be a general agreement of professional opinion that the first duty of the cavalry is to be able to meet, courageously, that of the enemy. To this end there should be a constant effort towards the attainment of superiority. Not necessarily in numbers, although that may be very desirable, but in training, discipline and leadership, and above all, in those moral qualities that give preëminence on the field of war. This question of superiority will be decided soon after the opposing armies have entered upon the theater of war, by cavalry combats, in which fire-action will have no part. Hence the imperative necessity of preserving unimpaired all the functions of the arm that gives efficiency to its shock-action. There are no duties more important than those of security and observation; and the degree of efficiency with which these duties are performed will depend upon the measure of success which the cavalry has attained in its encounters with the horsemen of the enemy. An ideal condition is that in which the movements and positions of the army are covered, as with an impenetrable screen, while those of the enemy are laid open to observation and attack.

The place of the cavalry on the battle-field is said to be on the flanks; there to guard against the flanking movements of the enemy; to repel attacks of the hostile cavalry, and to seize opportunities for successful attack, either upon the enemy's cavalry, upon portions of

the line where the ammunition supply may have been exhausted, or upon exposed and unsupported batteries. It is also promised that it shall have opportunities to sacrifice itself, like BREDOW at Vionville, for the succor of infantry lines, sorely pressed, or to cover the retreat of defeated forces. In the event of success the cavalry is to dash in pursuit and reap the fruits of victory.

It must be acknowledged that the duties enumerated are sufficiently comprehensive and important to satisfy the fighting instincts of most cavalrymen. Nevertheless, our past experience and the changes in tactics which the use of smokeless powder and small caliber arms may be expected to produce, indicate that a considerable extension of this role is probable.

The versatility of our cavalry, due to its training in the school of war on the western border, and the ability that it has shown to fight with effect dismounted without injuring its efficiency in the shock action of pure cavalry, has been previously alluded to. Its whole history shows that this ability is its distinguishing characteristic, and a specification of instances is believed to be unnecessary for the object of this paper. As the efficiency of our cavalry in the past has consisted largely in its fire action, it should, equally with the infantry, reap the benefits to be derived from improved arms and explosives; with the consequent increase of its role in war.

It must be acknowledged that, even in dismounted work, the cavalry has many advantages that the infantry does not possess. The infantry soldier is weighted down with the burden of his equipment, which, under the most favorable circumstances, must weigh at least forty pounds; he usually goes into action after hours of wearisome marching, when every faculty is deadened by fatigue, and activity of movement is impossible. On the other hand, the trooper reaches the scene of action without excessive fatigue, and dismounting, goes into action unencumbered, except by his ammunition belt and light pistol (that will doubtless ere long replace the present heavy and clumsy weapon). His light and handy carbine will prove fully as effective as the heavier arm of the infantry within the distances at which small-arm fire is likely to be used. Considering these facts, it can hardly be doubted that the dismounted action of cavalry will be largely relied on in future battles. The facility with which it can be moved from one portion of the field to another will, in the magnificent distances which will be a characteristic of future battle-fields, render it an invaluable reserve force; certainly not to be used to do the work of the infantry, but held for those occasions

of emergency, which are sure to arise, when celerity of action is all-important.

In the duties of reconnaissance and observation, dismounted fire action is no less important. These duties involve conflicts with the enemy's infantry, and unless the dismounted efficiency of the cavalry bears some just proportion to that of the opposing force, they will not be properly performed. Cavalry that must call infantry to its aid against the irregulars of the enemy, as did the German cavalry against the franc-tireurs in 1870–71, belongs to a past age, and has no place in modern war. Fired on from woods, or other places inaccessible to mounted troops, the cavalry must be able to dislodge the opposing force by dismounted action, or it must seek safety in flight.

It has been previously suggested that in future wars conditions will constantly arise in which armies will confront each other for days, weeks, and possibly months, the invading force finding all progress checked by the stubborn defence of intrenched lines. It is under these conditions that the cavalry, by independent expeditions against the enemy's lines of supply and communication, will find full opportunity to demonstrate the value of its dismounted fire action. Expeditions like those of SHERIDAN'S around Richmond, in May, 1864, and WILSON'S against Selma and Montgomery, Alabama, in March, 1865, are only possible to cavalry possessing the ability to fight equally well mounted or dismounted; and the conditions that must arise from the increased efficiency of small-arm fire are those that will give great value to such expeditions. Cavalry that can fight equally well on foot or horseback, given some horse artillery, combines the powers of the three arms, with the immense advantage of celerity of movement. These expeditions should not, however, rely for success on celerity alone. They should be in sufficient force to command respect, and be able to devote all necessary time to the destruction of railroads and supplies. A further illustration of the value of dismounted efficiency will be found in the pursuit of defeated armies, where the cavalry, by celerity of movement, takes up positions in advance of the retreating army, and by holding them until the arrival of the infantry, forces the enemy off his chosen line of retreat, and compels his final dispersion or surrender. There is no better example of such use of cavalry than the campaign of Five Forks.

It may be said that the uses of cavalry that have been indicated are too well established in this country to need any demonstration. This may, possibly, be granted. Nevertheless, it may be believed

that the conditions of war incident to recent inventions have vastly increased the value of that cavalry independence which arises from its ability to fight both mounted and dismounted, and that it will not be found unprofitable to keep this fact in view.

Comparative freedom from the engrossing duties of field service within the last few years, has given opportunity for study and research. Foreign military literature has been eagerly sought after, and possessing, as it does, a spice of novelty, has been found more interesting than the productions of our own writers. There is no intention to disparage these foreign military works. They give much useful information concerning the training of troops and their employment in war; and if we keep constantly in mind the conditions under which the experience of their writers was gained, they can be studied with profit. In treating of cavalry nearly all foreign writers dwell exclusively upon subjects relating to efficiency in shock action, and there appears to be a growing tendency in our service towards giving exclusive attention to cavalry training in this direction, to the neglect of its no less important training in dismounted work. True, we have our target practice, but is there not evident a disposition to decry its importance, and a growing distaste for dismounted exercises?

Let us not in our zeal to excel as horsemen, neglect the less brilliant but no less important dismounted training, but keeping in mind the past glorious record of our cavalry, gain increased confidence from the knowledge that our experience has pointed the way for the older nations. Recognizing the immense value of fire action in combination with charging power, they have sought to attain the desired end by a variety of expedients. Infantry has been sent along with the cavalry divisions to afford the necessary support, with the result of destroying the usefulness of the mounted arm, by tying it to the infantry.

In some instances the infantry has been mounted on horses, and in others it has been placed in wagons, but both methods have proved equally unsatisfactory, concert of action between the two forces being found impracticable. And so, tentatively, and with very slow and hesitating steps, we see the great military powers beginning their progress in the direction that we have been forced to take by the conditions of our service. It may be believed that during the next great war the overwhelming importance of cavalry independence will be made fully evident, and that thereafter, in the training of cavalry, dismounted efficiency will receive vigorous attention.

Our English cousins, recognizing in our cavalry, throughout the campaigns of the Civil War, an efficiency that their own has never attained, content themselves by calling us "mounted infantry." The name is not important; but, should an opportunity be afforded, let us trust that their horsemen may find, in fair combat, that our troopers are not wanting in the essential attributes of cavalry soldiers.

FORT YATES, NORTH DAKOTA,
November 29, 1892.

GAITS AND GAITING OF HORSES.

By First Lieutenant WILLIAM H. SMITH, Adjutant Tenth Cavalry.

IN starting out I will state that for the last five years I have been studying and experimenting whenever opportunity offered with the gaits and gaiting of horses. Only those experiments, however, which have given the best results, will be here described. By the gaits of horses, I mean the walk, trot and gallop. The other artificial gaits of the horse, such as the pace, rack, etc., may be useful to civilians, (such as old farmers riding to town for the mail), or possibly to officers of other arms of the service, but for the cavalryman they can, of course, have no professional interest. In studying the subject of horses' gaits I have been led to believe that when a horse was pushed to the limit of his speed at one gait, it was more fatiguing to him than to go at the same rate of speed at the next faster gait. For instance, if the limit of a horse's speed at the walk is five miles an hour, it is more fatiguing for him to travel that fast at a walk than at a jog trot; or, if the limit of his trot is twelve miles an hour, he could go at that rate easier at a gallop. Some of the reasons that have led me to this conclusion are as follows: Whenever a horse is driven in a herd, or led beside another horse, or in fact whenever he is allowed to travel in the way most suitable to himself, if pushed beyond a medium walk he will take the trot, or when pushed at the trot he will take the gallop; pack-mules behave in exactly the same way, notwithstanding the loads on their backs, so that I think it is not so much the preference of the horse as his training and subordination of his own will to that of his rider that make him continue at the walk or trot after the point has been passed, when it would be easier to move at the next faster gait. Trainers of race horses say that even the best thoroughbreds, after months of training, cannot run over five hundred yards at the limit of their speed, while if they run only a few seconds slower than their limit they can run for miles.

For these reasons and others, which I will not now take up space in detailing, I was led to select medium rates of speed for each gait, and to believe that the method of marching so much in vogue in our service was radically wrong. The method I refer to is that used by so many of our officers, viz: for the leader of a column to pick out a good walking horse for himself, and, placing himself at the head of the column, march along all day, keeping his own horse at the limit of his speed at the walk and all the other horses in the column on the same strain, or else on the jog, with halts at only such times as his personal wants or convenience dictate, with the result that the command arrives at camp tired out from the continual nervous strain and monotony of the march, rather than from legitimate causes.

After numerous trials of different ways of marching, I have finally settled on the following method for my own marching and riding: To make about five miles per hour, march the first hour at the walk at a four mile gait, then halt for five minutes, then mount and march forty minutes at the walk, then twenty minutes at the trot at the rate of eight miles per hour, then forty minutes at the walk, etc., trotting twenty minutes in each hour after the first, with a halt of five minutes every two hours. To make about six miles per hour, walk twenty minutes and trot twenty, making a halt of five minutes at the end of every two hours as before. To make about six and two-thirds miles per hour, walk ten minutes and trot twenty, halting as before. I think when any considerable distance has to be covered that six and two-thirds miles per hour is about as fast as a command can march and arrive in good condition. I have several times made rides of from thirty-five to forty-four miles averaging seven miles per hour, by walking five minutes and trotting twenty, and arrived with horses in good condition; but the horses were in excellent trim before starting out.

The trot is the gait *par excellence* for covering distances with a minimum amount of fatigue to the horse. A horse expends no more vital energy in trotting ten miles at the rate of eight miles per hour than he would in galloping six miles at the rate of twelve miles per hour. It is a gait at which horses do not fret or worry, and after a very little training they will trot as steadily as clock-work, hardly varying fifteen seconds to the mile. I know of no more business-like looking sight than to see a large command moving by at a swinging trot, with not a horse fretting or galloping, and with no checking or lengthening out of the column. It reminds one of a railroad train more than anything else, and it looks as though the

command was going to get somewhere, and do something after it got there.

I have tried varying the length of time at the trot from five minutes to four hours, but for the last year I have settled on the period of twenty minutes as giving the best results for route marching. Of course this involves trotting up and down ordinary grades and across small ravines, etc., but I have seen a command of five troops of cavalry do it without material alteration of the gait or lengthening of the column, and of course where five troops can do so, twenty-five can also; and as a matter of training, I believe in practicing it even with small commands, as with large commands it would be impracticable to pick out level stretches of good road for the whole column to trot on at once. The main fact to be observed in this kind of marching is that the head of each troop must be kept steady and the distances between troops regarded as elastic and not invariable. In going over bad spots of ground, such as a muddy place in the road or a ravine, etc., the distance between troops will almost unavoidably vary from two or three yards to fifteen, but if the head of each troop is kept perfectly steady the distances will take care of themselves.

Some officers have an idea that if a horse goes out of a walk down any kind of a grade, no matter how slight, he is liable to "stove himself up." This may be true of an ill-formed, untrained brute that sticks each leg out like a post and then falls on it, but if a horse has good shoulders and pasterns, and has received even a moderate amount of "setting up" training, he will not injure himself in the least. I have a sixteen-year-old horse, and I have been trotting him up and down hill for the last four years without his showing any indication of being "stove up," and I can make the same remark about the troop horses which have come under my observation. The trot is not so easy on the rider as either the walk or gallop, but after a few months' practice one never notices any discomfort from it. With two other officers, I once rode for sixteen consecutive hours at an eight-mile per hour trot without experiencing any excessive fatigue, but I have often thought the element of personal discomfort went a long way toward making the trot so obnoxious to some officers.

During the latter part of the year 1890 two troops of the Tenth Cavalry, stationed at Fort Apache, Arizona, were drilled daily from 7 to 9 A. M., Sundays only excepted. Fatigue call was sounded at 9:15 A. M., and guard mounting was held at retreat. In this way every man attended drill, except one in the barracks, one in the stables, the sick and the guard. The fatigue work at the post at this

time was unusually heavy; two sets of barracks were being built and four sets of barracks and sixteen sets of officers' quarters were undergoing repairs. There were three different contractors at work on these buildings, and to each of them the material had to be delivered on the ground by the troops, who, in addition to the ordinary post fatigue work, had also to quarry and haul the stone for the buildings, burn and haul lime, and saw and haul lumber. Yet all this was done with no hitch anywhere, and the drills were carried on daily, not stopping for a little rain and mud, as is so often done.

I will describe the course pursued in my own troop. There was some slight difference in the other as to minor details, but the results in both were practically the same. Three miles were measured off, each quarter being marked, and over this distance the troop was marched every morning, the first mile being covered at the walk, column of files being frequently formed, and the men given the saber drill while marching. While at the walk the aim was to march exactly four miles per hour. After this column of fours or platoons, or sometimes troop front, was formed, and the trot was taken for the next two miles, eight miles per hour being the desired rate. The time was taken accurately, and the men informed how much too fast or too slow each division of the distance had been made. The distances had been laid off with the double object of having a good drill ground at the end, and of teaching the men to march over slightly rolling ground without increasing or diminishing the speed. Having reached the end of the measured distance, the troop was drilled for an hour, care being taken to keep the same rates of speed as when marching out. The drill being finished, the troop was marched back over the measured ground, reversing the order of going out, so far as gaits were concerned. By the end of a month remarkable progress had been made. All except three or four of the horses could be depended upon to walk steadily at the rate of four, and trot at the rate of eight miles per hour, and a great advance had also been made in the drill of the men. After going a few hundred yards it was a rare thing not to see all the horses take the proper gait.

During the latter part of the second month the gallop was taken for the last half mile, at the rate of twelve miles per hour, and during the drill the guidon would be sent out about a thousand yards ahead, with instructions to ride about in any direction, limiting the gait to the trot. The troop would then be formed in line and the gallop taken, the men being instructed to ride on the guidon. When about a hundred yards from the guidon the charge would be sounded, and

the troop after charging a short distance would be brought to a trot, then to a walk, immediately after which ranks were broken and the men instructed to fence with their sabers. In a few minutes they were assembled at a trot behind the troop commander, who rode off in a direction different from that in which the charge had been made; each man rallied in his own platoon, but without reference to his previous number. As soon as they rallied, which rarely took more than thirty seconds, another charge would be made and ranks again broken, the rally following as before. After this the rest of the drill was invariably at a walk and trot. During these charges ground scouts were always thrown out, the principal guides being generally used for the purpose. Once during each week there was a skirmish drill, always with a represented enemy. Once or twice each week the troop on the road would be marched in advance or rear guard formation. At the end of the second month all the horses in the troop could be depended upon to go steadily and accurately at the gait ordered, excepting perhaps two or three at the walk.

I think that from this time on, as long as these drills lasted, the two troops were in the best shape of any I have ever seen in our service. They could march either in line or column over every kind of ground practicable for mounted troops, with all the horses, except possibly one or two in each troop, going at the gait ordered, and without crowding or opening out, and without wavering in the alignment. The charge could be made with a solid front, all the horses being well in hand, and immediately after the mêlée the men could form promptly and deliver another charge in a new direction. The progress made in advance and rear guard duty, fighting on foot, etc., had also been very satisfactory.

In February, 1892, the commanding officer of Fort Grant, the headquarters of the Tenth Cavalry, inaugurated a similar system of drill. Mounted drill was held daily, Sundays excepted, from 7 to 9 A. M., with fatigue call at 9:15 and guard mounting at 9:30. There was some growling at first, and some officers declared that the army was becoming "Germanized," and that we had better stick to American methods, etc., but when the Department Inspector came around some weeks later and pronounced the squadron the most business-like body he had seen since the War, the growling ceased. By the way, it is strange that every innovation or effort at progress in our service should be characterized by so many of our officers as "German." I fancy the Germans would take it as a compliment should they find this out.

At Grant three miles were measured off, and the points marked

as at Apache. The command was usually formed in column of fours and marched out to the drill ground, where drills were held by squadron or troop, as the senior officer present thought best. After drilling for about an hour the squadron was marched in, executing squadron movements en route. On arriving at the Post the exercises were concluded by a mounted parade or review. The methods followed as to gaits while going to and returning from the drill ground were similar to those at Apache, with nearly equally satisfactory results. The command was just beginning the gallop when a telegram was received ordering the regiment to Montana, thus suspending the drills. In this move our horses were left behind, so that on arriving at Fort Custer we had to begin all over again. Some weeks after we reached there a system of drills similar to that at Fort Grant was commenced, but owing to the decidedly poor quality of the horses, and the fact that there were only five drills per week, which were frequently interrupted for from one to ten days at a time on account of bad or hot weather or fatigue work, the results have not been so good as those in Arizona, notwithstanding the fact that we had nearly five months' drill here, as compared with two months there. The command has so far (November 16, 1892) been given very little practice in galloping, so that the walk and trot are the only gaits in which the horses are at all settled.

From the foregoing experiences I think at least two hours' drill per day, and six days per week, are necessary to settle horses in their gaits, or even to keep them healthy and in any sort of condition for effective service. Take the one item of backs. For instance, would any man, after having done no more laborious work with his hands for six months than to handle his knife and fork at meals, expect to take up a pair of oars and row for several hours without blistering his hands? And could he not, after a few months' practice, row all day without blistering them? Some officers seem to expect (in practice, if not in theory) that a horse's back, after having had no saddle on for six months, is able to bear 150 to 200 pounds from seven to ten hours a day for an indefinite period without getting sore. The fact that it is so often done proves rather the excellence of our saddle and the naturally good qualities of the horse's back than anything else, just as a perfectly fitting pair of gloves might have saved the oarsman's hands in the first case. But the point I wish to make is that it is necessary for the backs alone, in order to keep them hard and in condition to bear the weight of the man and saddle without liability to become sore, that the horses be exercised daily under the saddle. Again, as to muscle; how many men are

there who can sit around, week after week, performing no more physical work than crossing their legs under a card table, or perhaps walking to stables once a day, and still retain anything like muscular vigor? Yet usually this kind of men expect their horses, with no more daily exercise than going to and from the watering trough, to perform the most vigorous kind of work when occasion demands. And it is usually these same men who ride their horses at a gallop when it is necessary to travel faster than a walk.

But to return to the subject of gaits. I have seen horses after five consecutive drills seem on Friday to be tolerably settled in their gaits and then come out on Monday, after two consecutive days of rest, and "go all to pieces." And this is not the exception, by any means. It is a commonly accepted fact in the cavalry that drills are always worse after a period of rest, no matter if it is only for one day. As to the amount of drill necessary per day, I think two hours is the minimum, not only to keep the horses in proper training, but also for the health of both men and horses. If it is practicable to have a drill ground several miles from the garrison, I think it is better to have all the drill for the day at one time and occupy part of the time in marching to and from the drill ground. Not only does this break the monotony of the so-called drill on the parade ground and enable the horses to be practiced and settled in the various gaits, but it also affords the commanding officer an opportunity of practically exercising the command in problems in minor tactics. If such ground is not practicable and if there are any unpaved roads in the vicinity, I think it is better to march out several miles and back and then practice the command in drill movements on the parade ground. In default of either of these methods, I think the best plan is to divide the time for drill into two different periods of one-and-a-half hours and one-half hour respectively, and to lay off near the stables riding tracks whose circumferences shall be respectively 117⅓, 234⅔ and 352 yards. Then for the one-and-one-half hours' drill the men should be marched in column of files around these tracks; the officer in charge, or some one designated by him, should hold the watch and tell the men at the completion of each circuit how much too fast or slow they were traveling at each gait. In Germany, I am informed by Lieut. P. H. CLARKE, the horses are gaited in the riding-halls during the winter in a manner similar to the one I have here described. At the drill of one-half hour the men can soon be taught all the movements in the troop and squadron drill. In all these suggestions I refer, of course, to the periods devoted to troop and squadron exercises, and not to the individual drill

of men and horses. What is required of troops more than anything else in war, or in fact in any kind of active service, is the ability to march, and certainly no troops, either mounted or foot, will ever acquire this ability by simple parade ground drill.

A great many officers honestly object to more than one hour's drill per day, for the reason that they think it tiresome, and that it disgusts their men and renders them dissatisfied. And so it does, if the aimless fours right and left parade ground drill is persisted in. But if common-sense methods are used, if the men are taught the duties which would actually be required of them in war, if their intelligence is called into use and the object of the various things pointed out to them; in short, if we make the instruction of our men as soldiers a study, and throw our hearts into the work, the weariness and disgust of the men soon vanish. But, however much officers and men may growl about drill, they feel better when they have had drill than they do when it has been suspended. When I was a cadet at the Academy I remember that whenever recall from drill would sound we would all set up a shout of delight, and then most of us would go to our rooms and put in the afternoon smoking and lying around on our bedding or playing cards, and as a consequence, when supper time came we felt stupid and ill-humored. And I believe the men feel very much the same way when they lounge around their barracks or canteen without sufficient vigorous physical exercise. To enjoy rest, one must be tired. As for myself, I know of no more luxurious feeling than that of being comfortably tired from physical exertion. If I have spent the day in playing polo or tennis or have had a good hard ride, I feel at peace with all mankind, but if I have put in the day lounging and smoking and drinking, the whole world seems out of kelter. I believe West Point is responsible for a great many bad customs as well as good ones. It has long been customary there to suspend drills on account of the least shower of rain or dampness of the ground, and it seems that a great many post commanders have considered it obligatory to do likewise. It has always seemed to me that men who were too delicate to stand a little wetting occasionally had better seek some more delicate occupation than soldiering.

The enthusiastic cavalryman, however, labors under many difficulties. The preference so generally given to paper and fatigue work, frequently causes insurmountable obstacles to be thrown in his way. Drills are too often suspended on account of the weather being too hot or too cold or the ground too muddy. But I have never heard of fatigue work being suspended for these reasons. It

seems reasonable to suppose that whenever a man can split wood, shingle a house, mow weeds or sweep a road, he can drill. I have never known a post surgeon to intimate to a post commander that the weather was too inclement for fatigue work, but I recall quite a number of instances when he reported that in his opinion drill would be prejudicial to the health of the command. Why this relative order of importance should ever have grown to be the accepted one, has often puzzled me, for certainly, in theory at least, an army is supposed to be a fighting organization, and most assuredly all the paper work and all the fatigue work ever performed would not enable an army to win a battle. However, like all enthusiasts, I look forward to better days to come, and one of the things I look forward to is the time when at least one-half of each day will be devoted to military instruction, and when the year will be divided into definite periods of instruction. For example: From November to May, individual instruction of man and horse. In the first part of May each year, let there be an inspection at which each troop commander will have to account individually for each poorly set up man and horse. Then let the number in each regiment be published annually to the army. I think captains and colonels would soon find a way of drilling their men and horses in the setting up exercises during the winter. From the first of May to June 30th, troop drills and target practice. Then let there be another inspection of the troops at which any obvious faults, such as horses not properly gaited or gun-shy, or noticeable want of regularity or accuracy in marching and drilling, will have to be accounted for as before. July and August to squadron drill and completion of target practice, with an inspection at the end of it. September to regimental drill, wherever regiments can be united. And October to minor tactical problems and field maneuvers. Of course this would keep an inspecting officer somewhat busy, but if he were a live, progressive cavalryman, he would not mind the work, and we would certainly want no other kind of an inspector.

DISCUSSION.

Major THEODORE J. WINT, Tenth Cavalry.

In the very interesting article entitled, "Gaits and Gaiting of Horses," I believe the conclusions arrived at to be generally correct, and I agree with the writer in regard to the necessity of systematizing drills and making them progressive, and if, as he suggests, troop commanders were required to account individually

for each poorly set up man and horse, good results would follow, as it would give to horsemanship and the training of man and horse the same importance that is now attached to target practice. The requirements of good cavalry and the best methods of instruction are, no doubt, generally understood by our cavalry officers, but by some such knowledge is not possessed, or else unapplied. These appear to understand that a cavalryman is simply a combination of man, horse, arms and equipments, that can be moved rapidly; their only test of good or poor cavalry being whether the combination does or does not hold together at any given time, instead of its constituting a mounted soldier who is capable of performing efficient service, not only by having good use of himself and arms, but who also has perfect control over his horse and knows how, with the least possible fatigue, wear and tear, to obtain the greatest amount of work from him.

In the first case, although the combination might not fly to pieces, and consequently be pronounced good cavalry, a cavalryman might see in the combination an unmanageable horse and helpless rider that, for any mounted service, would not only be worthless, but actually in the way of better trained men and horses.

To train a serviceable cavalryman, the different parts of the combination must first be made ready for assembling; and then put together piece by piece with as much care as would be taken with any piece of mechanism. Good results cannot be obtained in any other way, and the combination when not so made up can at once be detected by a competent instructor.

Captain THOMAS C. LEBO, Tenth Cavalry.

I heartily concur in the remarks of First Lieutenant WILLIAM H. SMITH, Tenth Cavalry, on the gaits and gaiting of horses, etc. He is a live and progressive young cavalry officer and, in my opinion, has the proper ideas as to how cavalry should be drilled in order to bring it to a state of proficiency for actual warfare.

THE BUGLER.

By HENRY T. BARTLETT, Bugler First Massachusetts Cavalry, and Headquarters Bugler to General Henry E. Davies.

[From *First Maine Bugle*, July, 1892.]

There was a time, way back in 'sixty-two,
When Johnny Rebs and even Boys in Blue
Objected to the notes the bugle sent
To 'wake each corps, brigade and regiment
Before day dawned,—then through the morning mist
The weary soldiers, roused from dreaming, hissed
Their words of wrath and vengeance on my head
With—"Damn that Bugler!" "Shoot the Bugler dead!"

But, since those days of war and war's alarms
That broke your rest while sleeping on your arms—
The drum's tattoo, the bugle's blast you fear
No more. With willing hearts you come to hear
Those old notes sound again. You come to see
The bugle that rang out the "Reveille,"
"To Horse," the "Trot," the "Gallop" and the "Charge,"
When clashing squadrons, fighting o'er the large
Virginia vales where placid waters ran,
Drove out the Rebel hordes, with gallant Sheridan.

The war has ceased; and now in peaceful halls
I'm called upon to sound the bugle calls.
I, too, shall cease; but not, I pray, until
Some veteran's son and grandson learn to trill
This bugle's call "To Arms," and "Boots and Saddles"—
'Till every foe to flag and peace "skedaddles"
To that "last ditch," designed of old by fate,
Where Gabriel's (resurrection) Trump shall never penetrate.

No more we answer "Surgeon's Call" for pills
And whiskey to keep off the ague's chills;
No more we fight for hard-tack and for glory;
No more the daily "Roll Call" inventory;

No weary, midnight picket path we walk;
No more the sergeant orders "No back talk!"
Each veteran now may have his own sweet way.
While captains listen, privates have their say
About the war. How General So-and-So
Was flanked or whipped for being much too slow,
When Southern troops came bounding through the pines
Like beasts of prey, and doubled up our lines.

No "Stables," "Guard Mount," "Drill" or "Dress Parade,"
Nor scout, nor sly guerilla, nor the raid.
No "Fours Right Wheel," "March," "Forward," "Guide Left," "Trot!"
No hissing bullets, shells, nor screaming shot,
Except in dreams now fading fast away,
Of bloody fields and mingling blue and grey.
But, while I live and strength of will remains
To give this bugle its accustomed strains,
Those strains that roused you, veterans, in the field,
To stand for equal rights a living shield—
Its echoing notes your memories shall renew
From 'sixty-one until the grand review,
Where elbows touched and troops rode boot to boot,
Triumphant 'neath the flag that South and North salute.

New York, May 28, 1892.

CONVERSATIONS ON CAVALRY; BY PRINCE KRAFT ZU HOHENLOHE-INGELFINGEN.

TRANSLATED FROM THE GERMAN,
BY FIRST LIEUTENANT CARL REICHMANN, NINTH INFANTRY.

FOURTH CONVERSATION, (DECEMBER 20, 1885).—OF THE TRAINING OF THE HORSE IN THE TIME OF FREDERICK THE GREAT.

H. You were going to tell me to-day something of the training of the remounts in the past century.

S. It is rather difficult to give an exact description of the training of the remounts in the times of the Great King, because detailed accounts are lacking.

H. I did not anticipate any difficulty in the matter. Could we not gain our end by making inferences? A horse is always a horse, and the principles of the cavalry in different centuries probably did not differ essentially from each other. XENOPHON's principles are to this day recognized by the profession.

S. That is true enough! Only the means selected for reaching the correct result have been different at different times. On one hand perhaps the shortest and best means were not always selected; on the other hand, different breeds of horses require different treatment.

H. Were the mounts of the cavalry of the past century of inferior or superior breed to our own?

S. There is no doubt that we have a much better bred and more enduring horse than the cavalry had 130 years ago. But our horses also require greater care and better treatment.

H. Perhaps they are also more manageable and docile than formerly. Officers of the times of the Wars of Liberation told me that they used to have such vicious horses in the troop, that they bucked off the saddle, slipped off the bridle, and attacked the men.

S. At the beginning of this century remounts for the army were still bought in the Ukraine. These horses had grown up wild and were caught with the lasso.

H. Then it was necessary to use force to compel obedience.

S. Yes. I remember that in the first years of my service we still had some horses, whose stalls the men did not dare to enter for saddling, but put on the saddles from the adjoining stalls. It is a question in my mind, whether the rough treatment did not add to the viciousness of the horses, and whether the present more gentle treatment would not have been more effective with those wild horses.

H. You mean that in the past century horses were more roughly treated than now?

S. I believe so, for the farther we go back, the rougher and more inhuman the method of breaking horses.

H. I heard that SEIDLER, the equerry of the school squadron, in Berlin and Schwedt, frequently said: "If the beast won't bend, break his bones."

S. In the past century this was probably rather worse than better. The horses were not so valuable as now, nor so beautiful and well bred; and, because grown up wild, not naturally so much attached to man. Hence, they were treated more as things than as living beings, until training had rendered them fit for use. Whatever could not stand the training, perished. Altogether, there was less gentleness used in those days than now, as shown by the rod.

H. I also think that the conformation of the horses put greater difficulties in the way of training than now. At least, on looking at the pictures of horses of those days, with the large, clumsy quarters, thick head and neck, the deformed lower jaw and relatively weak forehand, one is surprised that such horses could have been used for riding purposes.

S. The pictures may not be accurate, it is true, but the fact that these figures are very frequent, and that there is not a horse shown in one of those old pictures which is well bred and well formed according to our ideas, gives reason to suppose that these pictures give a correct representation of the breeds of that epoch. But at the same time we must not forget that many stallions, which are more susceptible of training and have stronger quarters, were ridden then.

H. What I am particularly anxious to know is your idea of the beginning of the training of the remounts. Was a separate remount squad formed, as now, in which the remounts were trained under the supervision of an instructor, or what was the modus operandi?

S. The formation of a separate remount squad under an in-

structor, in which one refractory horse makes the others restive, and in which they learn bad habits from each other, is a necessary evil with which we have to put up, because we have not a sufficient number of riders capable of breaking their horses by themselves. I have not read anything which would enable me to answer your question, but I suppose that with the large number of well trained riders in those days it was not deemed necessary to form separate remount squads.

H. And what do you think was the procedure then?

S. I believe each remount was turned over to a skilled rider, who broke it by himself, or when the assistance of longe, whip or pillars* became necessary, with the help of one or two assistants.

H. Was there a sufficient number of suitable men?

S. But one skilled rider was necessary for each horse. The other two men, when two were necessary, had to do what he ordered. If we take MARWITZ's calculation, there were in his days seven well trained riders in the company (half a troop) barring the non-commissioned officers, and eight remounts. Hence there was no difficulty in providing each remount with a skilled rider. The men to assist the rider, were probably selected from the most gifted young riders, who were thus in turn instructed in breaking remounts. If but one or two remount riders were thus instructed each year, it was sufficient in view of the long term of service.

H. Thus one remount rider always taught the other empirically, without any defined theory.

S. I believe so, although the theories of riding were as firmly established then as they are with us and more so; and adherence to the same was enforced by the superior officers in charge. In the period 1750–56 and in 1774, when the cavalry had reached the height of its efficiency, things were still more favorable. For the number of furloughed men was smaller; that of thoroughly trained riders larger.

H. We agreed that in those days the horses were more rudely treated than they are now. It is some comfort to me to know that you admit that ours, in comparison with former cavalry, shows progress in one point at least.

S. But you must not forget, that in those days the quarters were much more powerful and put to more use. It was not necessary then, as it is now, to gather the horse so that he rested equally on fore and

*Two upright timbers, between which refractory horses, with or without riders, were worked, or fastened, if necessary to reduce them to obedience.—[TRANSLATOR.]

hind legs; but so that the quarters carried more weight than the forehand. It was necessary to use force, *i. e.*, whip and pillars.

H. In what way had the quarters to be used more than the forehand?

S. Up to 1740 the charge as foragers was also authorized by the regulations; individual riders caracoling before the enemy's front, firing at him, trying to evade his bullets by pirouetting, rearing and executing all kinds of artful medieval maneuvers, which became obsolete only with the development of small-arms fire. CHARLES XII. had already demanded the charge of cavalry in solid line, but FREDERICK THE GREAT was the first to fully succeed with it. The old system of horse breaking, however, was not everywhere abandoned at once; that would have been impossible, when all skilled and experienced riders had been trained in one particular system of horse breaking.

H. According to this the remounts were forcibly rendered fit for service in one year by the use of whip, longe, pillars and Spanish riders.* I should think that more than half of them must have been ruined.

S. You must consider that horses captured wild, could stand more than those raised in studs, also that when they came to the troop, they were one or two years older than now; and, furthermore, you must not think that the treatment was so rude that the horses were beaten to death at once. Much time was devoted to breaking the remounts, and they were handled with great care.

H. That is true. MARWITZ says that the remounts were spared *for three or four years, and therefore deducts at least twenty-four* horses when calculating the number of horses fit for service.

S. The calculation of MARWITZ is not quite correct. For he says that, after special reviews, enough men were furloughed to still allow the company to turn out forty-eight strong. But if twenty-four are deducted from the sixty-six horses of the gendarmes (exclusive of non-commissioned officers) the company could never turn out forty-eight strong except during the practice seasons, not to mention the special review and the great fall maneuvers, for which the company turned out stronger yet. I think that the remounts were treated as such for two full years, and that a few or perhaps all of the older contingent were taken along to the great fall maneuvers, when it was necessary to turn out in the prescribed strength. For the special

*Free translation; also called "dumb jockey." An attachment to fasten over the saddle, the horse going on the longe without rider, to hold the reins in the same position as a rider would, were he able to keep a firm seat and steady hand on such a vicious horse.—[TRANSLATOR.]

review everybody turned out; it was, however, not a hard day for the horses, for it was only the muster day to ascertain whether everything on paper was there in fact.

H. When after two years of training the horses were considered fit for work in the troop, they became a component part of the troop and were perhaps not trained further.

S. On the contrary, the training did not stop. In spite of all the individual riding the training continued, especially in winter. Although it is not certain, yet we must suppose that the principles of the high school, which had been the standard up to 1740, were still adhered to later on. The horses were probably advanced in this school dependent upon available time and means, until the want of recruit horses and the further training as campaign horses put an end to all other training. For, as you may read in VARNHAGEN VON ENSE, riding across country was practiced almost daily from 1741, especially during the pleasant season. You may also read in the "Comrade" (No. 41, October 10, 1885), that every rider of SEIDLITZ's body squadron, after riding his horse to water in the evening, took a few turns on the public square at Ohlen and took some obstacles at full speed. It was the constant aim to render the horse more suitable for individual riding, for riding across country. It was sought by all kind of exercises to develop the intelligence of the horses, that they might learn to overcome by themselves obstacles of the ground, to look out for themselves, so as not to require the aid of the rider by rein and thigh at every ditch or log to keep them from stumbling and falling.

H. You speak of the intelligence of the horse. Its stupidity is proverbial, and one might indeed believe it to be so on seeing at what objects such a horse sometimes shies.

S. The fact that the horse is considered a stupid animal has given rise to many faults in its training. Let me tell you, however, that the horse is one of the smartest animals there is, and some horses have more sense than many a man; but if you do your best to make the horse stupid it must gradually become stupid.

H. But who would do such a thing?

S. Who? All of us. If we and all our ancestors, many generations back, had been tied up all our lives in a stable, isolated, each one perhaps in a box stall, and had only been taken out four or five times per week, to run around in a circle in a covered hall, I believe we would have less sense than the horses which are now considered stupid.

H. The low intellectual capacity possessed by the unfortunate

CASPER HAUSER when brought before the public, would seem to confirm your statement.

S. When such a stupefied horse does not learn to know objects, he must be afraid of those which appear suspicious to him. If he does not know a ditch or a gutter, he will jump short and fall in taking the ditch, while at some other time he will uselessly exert his powers by taking a gigantic leap over a small gutter. If he has gone on the level hall only, he will fail to notice the clod of earth lying in the stubble field and stumble over it.

H. That is the reason why thoroughbreds used to the race course only, fail to notice small obstacles and fall over them, and yet are passionately fond of taking large obstacles, but are utterly worthless for general riding.

S. Certainly! But the ground on which cavalry acts is mostly of a rough kind, and for this reason horses that require smooth ground are unfit for campaign riding. The horses must be accustomed and trained to look at the ground themselves, and to step so that they will not stumble or fall even when going over hedge and ditch. In this they must be able to dispense with aid from the rider, whose business it is to look out for the enemy, and not for every furrow; who, so far as the horse is concerned, has only to take care that he maintains an easy, firm, steady seat, and does not allow himself to be hauled along by the reins, but feels the bit lightly so that he may know when the horse needs his aid.

H. But this school, which you also consider the foundation of all riding, prescribes how to gather the horse at the beginning; how to give him his head in the middle, and how to support him with the reins at the end of the jump.

S. That is true for rushers with school horses, and for leaping obstacles during such rushes. But any one attempting to get over the ground with that in campaign riding must fail, especially if he neither is a school rider nor rides a school horse; in that case he only irritates the horse during the leap by such aids.

H. I am glad you say so. I never was taught the high school systematically, but during my first lessons I was taught the aids of the high school for the purpose of jumping. I never could understand those three prescribed aids for our leap. I was invariably found fault with; at one time I had gathered the horse too soon, at another, too late; again, I had not given him his head sufficiently during the leap, or at the end of the leap, supported the horse too late with the reins. It was only when another teacher, rejecting all these aids, showed me how to rouse the horse's attention by increased

thigh pressure twenty-five or fifty paces before the leap, and drive him forward on the reins, leaving him, however, entirely alone during the leap, that I jumped correctly, and that my horse jumped readily.

S. I readily believe it. The horse is not so stupid as to jump readily when during the jump he has been chucked in the mouth, and has reason to expect the same treatment again.

H. Now if a school horse under a school rider is gotten over a hurdle by other means than a campaign horse, I must ask whether two kinds of horses were kept in the troop, school horses and campaign horses, and whether the former were not taken out on to the terrain at all, or when there, whether they were handled on different principles?

S. So far we have talked much of school and school riding, school horses and school riders. We should have defined school in the first place. A school horse is one which has been trained according to the principles of the school by a rider himself trained in the school, and one which moves in accordance with the principles of the high school. Many think that every horse used in the hall for the purposes of instruction is a school horse, which is erroneous. At present there are but few school horses in Germany. In addition to a few such horses in the riding school at Hanover, you will find real school horses only in the "Spanish School" in Vienna. On the school horses the pupil learns the feeling experienced on a normally trained horse, and what mastery over a horse art gives. The school horse goes on his quarters, so to speak. The weight resting on the forehand of the horse in a normal state is removed by art, and transferred to the quarters. Resting on the haunches as it were, neck beautifully held in, with high action of the front legs, the school horse cannot stretch himself, but must trot and gallop almost on the spot, gaining as little ground as possible, and all this while feeling the reins lightly. The school step correctly executed is the triumph of the art. The horse which can take it correctly is capable of all school paces, and of the "high school."

H. This confirms me in the opinion that as long as school horses were trained in the squadron, they were probably never turned out for cross-country riding.

S. You must not think that the line of demarcation was so sharp; it was probably brought about gradually.

H. I am rather anxious to know how you reconcile those contradictions. Please tell me—for this is the principal point—are school horses fit for cavalry service?

S. The school horse is not equal to the demands now made on the campaign horse; his paces are too short. What FREDERICK THE GREAT demanded from his cavalry after 1741 could probably be gotten out of the then school horses under their excellent riders (up to 1740 the tendency was to make every cavalry horse a school horse).

H. Allow me to interrupt you. You hereby admit that to-day we must make greater demands on cavalry than FREDERICK did after 1741.

S. We now require longer paces and rapid paces continued for a longer time; the increased range of fire-arms demands it.

H. Agreed. Now if the present cavalry does not always come up entirely to the more exacting requirements of modern times, it does not follow that it would not have come up to the less exacting requirements of 1741, and that it is inferior to that of 1741.

S. Certainly not. And what do you want to prove by this?

H. That I was not wrong in extolling the achievements of our cavalry in 1870.

S. I never considered that wrong; I only meant that they can and must be increased.

H. Now, please go on and tell me how you think that school riding was harmonized with campaign riding in the past century.

S. FREDERICK THE GREAT found a cavalry which considered "the school" its supreme object. I told you before that "lançades" and "elevades," "caracoling," etc., were customary in battle. At Mollwitz the Prussian cavalry was defeated by the Austrian. FREDERICK THE GREAT from then on also demanded from his cavalry long, vehement, closed charges, and he demanded them over all kinds of ground. You told me yourself how in the camp of Kuttenberg he drilled individual squadrons himself in order to illustrate what he wanted. The school horses had then probably to be broken of the short, high paces, and gotten in good wind by longer paces. The short paces of the school were abolished; the horses had to learn how to stretch themselves. School paces with these horses were now out of the question; but the teachings of school riding produced *the implicit obedience* necessary for the sharp drill of those days.

H. You do not mean to say that after the First Silesian War school riding was entirely abandoned, and only campaign riding practiced?

S. On the contrary! There still remained the same horsemen who had learned their ideas of riding and horse breaking according to the principles of the high school. They began over and over again to break horses according to those principles, especially during

the time spent in winter quarters between the seasons of active operations. Perhaps they also tried to again practice the high school with such old school horses as remained from the last campaign until they recognized that a school horse "stretched" to long paces in campaign riding, ceased to be a school horse. Thus, under experienced riders, was campaign riding gradually developed from school riding in the time of the Great King, and in consequence of his demands on the cavalry.

H. When do you think this campaign riding of FREDERICK'S cavalry reached its highest point of perfection?

S. In the year 1756, and again in 1774. The Seven Years' War made too many gaps in the ranks of instructors, riders and horses: gaps which training in winter quarters could not fill completely.

H. Let us take 1774. Do you think that the high school was no longer practiced then in SEIDLITZ'S squadrons?

S. Considering what VARNHAGEN says, and what I just quoted from the "Comrade;" considering that the squadrons of those days were ever ready to form in the water of the Ohle at the signal of assembly, and every evening on returning from water took obstacles at full speed, I do not think it possible that these horses could still have been capable of the paces of the high school.

H. Now, if in the thirty-three years, from 1741 to 1774, the high school was gradually displaced in the troop by rational campaign riding, how could the principles of the high school remain standard for the training of the horses? There could not have remained any one who knew the high school. On the other hand, certain feats of SEIDLITZ'S horsemanship seem to me possible only on horses trained in the high school. At least, I cannot understand how anyone on a campaign horse can leap, from a halt, over the railing of the bridge into the Spree. Please explain to me this apparent inconsistency.

S. The feats of horsemanship related of SEIDLITZ do not at all imply, by themselves, that he was a school rider. There has always been a plenty of natural or campaign riders, and there always will be, who were, or are, so happily gifted that they learn and do everything by themselves and do not need the school. They are exceptional riders, who accomplish wonderful feats. Yet it does not enable them to teach, to impart their skill. They have the horses under complete control, obedience is implicit. We see this among tribes like the Cossacks, Bedouins, Indians, etc. The leap of SEIDLITZ over the railing of the bridge into the Spree is equaled, perhaps excelled, by the jump of a Mameluke in 1841 over the ramparts of the citadel

of Cairo upon rocks thirty or forty ells below. He certainly knew nothing of the high school. SEIDLITZ'S school riding is proved by his method of instruction. In his own regiment riding must have reached a high degree of perfection. It became and remained a matter of pride, ambition, sport, or whatever you may call it, on the part of the officers, to be able to show off at least one of their horses each, in the high school. In addition, there may still have remained some old riders—sergeant-majors, non-commissioned officers—from whom even the officers took lessons or to whom they gave their horses to train. Thus the high school, this crown of man's mastery over the horse, never died out. It was continued, at least among the instructors, and it was practicable each year to at least begin the first training of the remounts according to the principles of this noble art.

H. Then you think that when the horse was considered sufficiently trained, it was no longer practiced in the high school, but simply exercised in campaign riding? How does that agree with MARWITZ'S statement? He states that not more than nine horses of the troop (half a squadron) could be well broken, and says especially, that seven men out of sixty-six and nine horses out of seventy-five, were so completely trained, that they were able to preserve and propagate the art on which the existence of this arm depends. Then he continues: "All this noise (about good riding having been very general everywhere before 1806) came about in this way: that when somebody saw the best men on the best horses ride in the hall during the so-called parade hours, he was surprised at their skill, and conceived the erroneous idea that the whole regiment rode the same way." I can draw but one conclusion: that it was the high school which was exhibited on those nine "perfectly broken" horses.

S. You forget entirely that MARWITZ can speak only of the time in which the past century ended and ours began. At that time the decline of the cavalry was already considerable. I called your attention to this fact once before. In MARWITZ'S time the number of furloughed men and "Freiwaechter" was, as you told me yourself, so great that the squadron could turn out as such only during the drill and maneuver seasons. At other times, *i. e.*, from the end of May to the beginning of the fall and from the end of September to the beginning of March, there were but few men present for duty, and, according to your calculation, besides two annual contingents of recruits and the officers' servants, only seven gendarmes out of a total of sixty-six. The constant readiness for the field of the whole squadron as demanded by SEIDLITZ, of course ceased under these

circumstances. The squadron could no longer, as related in the "Comrade," assemble at any time in full strength on the public square at the trumpet signal. What was done with those nine men? Nothing at all, if the squadron commander was lazy; if he was zealous, he devoted the time to instruction in the art of riding. I cannot help thinking so. Any way, after years of peace, there is great temptation for the cavalry to mistake the means for the end, especially after the demise of those men, who know war and who know from experience, how much must be demanded from the cavalry. Then it is easily forgotten, that the art of riding is only a means toward the fulfillment of the duties of cavalry; and thus it is practiced for its own sake, as the only object of cavalry. How much more must this have been the case, when during the greater part of the year the squadron was so deficient in men as to preclude any exercise except that of riding. The "parade hours" and the nine school horses of the company of the regiment "gendarmes" mentioned by MARWITZ, if they were real school horses, appear to me as indicative of the decline of true campaign riding as practiced in SEIDLITZ's time.

H. Was not the riding of SEIDLITZ's cavalry bound to suffer if there had not been trained school horses in each squadron? I should think, that with the opportunity of putting the recruit once in a while, during his course of instruction, on a school horse so well trained as described by you above, he must immediately perceive the effect of every thigh pressure and the lightest touch of the bridle, whether intentional or not, and learn how one should feel on horseback. I should think, that thus "practically feeling," he would learn things which it is hard to express in words, *i. e.*, more in a quarter of an hour than could be explained to him in three hours.

S. He can learn the same thing on an easy-going, properly broken campaign horse. You must remember that the campaign horses under SEIDLITZ were well broken. They did not practice the "high school," for they were not broken to it, nor did they go short paces with high action, but carried themselves evenly and went long paces. They were thoroughly obedient, completely broken, and responded to every application of thigh or rein. The means employed to this end in SEIDLITZ's squadrons, were quite different from those of MARWITZ's. The latter figured on seven good riders out of a total of sixty-six men, *i. e.*, about one-tenth. In SEIDLITZ's time there were few furloughed men and "Freiwæchter." If we take the furloughed men and the "Freiwæchter" as one-tenth, and the recruits (for the men served as long as twenty years) as one-tenth at the most annually, and the men serving in their first and second years and treated as recruits, as two-tenths, there still remained seven-tenths of the total number of men in the third to the twentieth year of service.

H. Then the squadron must have had 105 splendid riders.

S. If we suppose only one-half of them to possess special aptitude, there still remain over fifty riders who conducted the training of their own horses better than our oldest non-commissioned officers today. After selecting from them the remount riders there still remained a choice of riders capable of retraining a horse spoiled by an awkward recruit or other poor rider.

H. Please tell me how the horses were further trained after being ridden as remounts (let us say for two years).

S. If I am to tell you that, I can present to you only a picture originating in my own imagination, for I never found any accurate account of the details of the inferior service at that time. I can only draw inferences from the general features handed down to us, in connection with my knowledge of cavalry.

H. That does not make any difference. Let us draw inferences. The result will then perhaps not be historically true, but the picture will be one of historic probability like the Egyptian novels of EBERS, which although not dealing with facts in every instance, yet give a vivid picture of a time which we have heretofore almost considered prehistoric.

S. Very well, let us try; but I expressly disclaim any absolute correctness for my statements.

H. The picture we shall thus receive we can again set before us later on, when we consider what methods would be the best today.

S. In the first place I take as my basis the fact, that under SEIDLITZ the squadron was always in condition to turn out for drill in war strength, winter as well as summer.

H. There must have been some minimum effective strength prescribed for this, for you counted two annual contingents of remounts —two tenths of the effective, two annual contingents of recruits— two-tenths, and the furloughed men, "Freiwæchter" and officers' servants—one-tenth, *i. e.*, one-half of the squadron, which are to be deducted.

S. This calculation is only seemingly correct. I counted the annual contingent of recruits at one-tenth *as a maximum*, for the men served as long as twenty years. In taking the recruits as one-tenth, a certain loss by death and disability on the part of the older contingents is assumed. Furthermore, although the recruits were treated

as such for two years, they had to drill with the troop at an early date, whenever the latter turned out as a whole, and were then "cuffed" into their proper places by the older men riding beside them. I think that the recruit was excused from squadron drill for six months at the most, which makes one-twentieth of the effective allow for furloughed men, etc., one-tenth or two-tenths counting the sick, etc. From the horses deduct two contingents of remounts and some horses for the recruits not yet able to ride with the troop; total a little over two-tenths of the effective. Thus with an organic strength of 150 men, the squadron could at any time turn out with 120 men and about 112 horses, and drill with platoons of twelve files.

H. How were the horses and riders distributed?

S. I should think (at least I should have done so) that the best riders were put on the least trained horses, and that the best trained horses after selecting the flank and non-commissioned officers' horses, were given to the recruits. This division made the squadron turn out that way for drill as well as for every mounted exercise.

H. You have assumed the remount riders to have turned out with the troop but not the remounts.

S. Of course the remount riders must thus have ridden two horses each day, and in the season when the squadron had to turn out in greater strength, so that the furloughed men had to be called in, remounts from the older contingents were probably turned out for drill in the number required. Guard duty also required many men, for it was carried on with both vigor and rigor, though perhaps during the season of squadron drill the guards were diminished and part of them turned out for drill.

H. Did the squadron ride and drill daily as thus arranged?

S. It turned out thus, but seldom drilled, perhaps once a week. Most of the time was devoted to increasing the command of the rider over the horse by means of individual riding, and fitting rider and horse for field service.

H. But did every rider have the same horse the whole year?

S. I should think so. After the squadron arrived at the place of exercise in regular formation, it broke ranks and was divided into riding classes, which proceeded to go through their exercises. Assuming 112 horses, we take off twelve non-commissioned officers (instructors) and four trumpeters; of the remaining ninety-six riders the fifty best could be left to themselves almost entirely, because they were such excellent riders. They rode the horses not completely trained or those to be retrained. The poorest riders, *i. e.*, the recruits and very poor riders of some length of service, about twenty-five, were put on the best horses and instructed separately

and in detail. There still remained about twenty riders of medium proficiency (yet more proficient than our best privates in the third year of service) on well trained horses, who perfected themselves in individual riding under instructors.

H. So much for the assignment of horses to the riders, of whom we may call the fifty riders just mentioned the "rough riders" of the squadron. What did the rough riders do with the horses which had undergone a two years' course of remount training? Did they not continue this training so as to bring them up to the more advanced requirements of equitation?

S. In a certain way the training was continued by the rough riders, but not the way you mean; riding hall tricks, side paces, counterpaces, etc., which had been practiced as a means to the end of making the horse pliant, supple and obedient, were not kept up, except when retraining became necessary. The horses were practiced (on the days when there was no squadron drill) principally in individual riding, the riders accustomed them more and more to the use of arms, developed their intelligence on all kinds of ground, including passage of fords and swimming, jumping hurdles and ditches; in short, they were practiced in all those exercises, which I told you before were taught the men. In this instance the horses were trained in these things by well instructed men. The recruits, after mastering the elementary principles, and the remounts of the second and perhaps also of the first year, participated in these exercises slightly at first, more and more afterward. But in winter, when the young recruits and the remounts used the riding hall, there must have been many days on which the older campaign horses only were exercised in these exercises by the older riders.

H. Were these older horses no longer exercised in the side paces of hall riding proper? Not even for the purpose of brushing up so they would not forget them?

S. What for? Why should they not forget them? As campaign horses they no longer needed them. To assume that the ordinary horse ought to go the side paces is to mistake their object; side paces are means to the end of making horses pliant, supple and obedient; when the horse becomes so, when the object has been attained, there is no longer any necessity for the means. A pupil commits the rules of orthography and syntax to memory; when he has become an author and has continued to write works in unsurpassed, classic language up to his fiftieth year, he will surely no longer be able to recite these rules, which were indispensable to him at first in order to learn how to write correctly. Nor does he consider it necessary to repeat those rules; he uses and observes them without thinking, because he ob-

serves them unconsciously. It is the same with a well broken horse; it is no longer necessary to exercise a campaign horse in the principles of the riding hall.

H. I should think that their muscles and sinews would stiffen sooner, all the more as increasing age also contributes toward this. It is the same way with man; I, at least, go through calisthenic exercises daily for the sake of my health, and in order not to become stiff.

S. But you would not need to do that if your vocation were such as to make you go through exercises daily which would keep your muscles and sinews supple and limber. Do you think that an acrobat or clown, who goes through the finest gymnastic exercises daily, continues to practice elementary exercises, by means of which his body was made supple when he was a child? What gymnastics are to the acrobat, individual riding is to the older horse; "tummeln" calls for so many turnings on the hind feet, individual combat for so many bendings in all directions of the horse's body, and jumping over large and small obstacles form so many useful exertions of muscles and sinews that they need not be supplemented by elementary side paces to make the horse limber and supple. The only requisite is that the rider shall guide the horse properly, and not make him obstinate and hard by false aids.

H. But this requisite is, in my opinion, one not always complied with; of the older riders referred to, there are, according to your calculation, more than twenty who are not perfect riders. They may, will and must make errors, and thus teach the horses bad habits, making it necessary, I should think, to have them re-broken.

S. Here we touch upon another subject, that of re-breaking horses more or less spoiled by faulty riding. More recruit horses are probably thus spoiled and were spoiled then, than horses ridden by older riders, although the recruits were put on the best broken horses.

H. It becomes absolutely necessary, that the elementary exercises be resorted to, that the horse be again practiced in the side paces, and I think that some hall riding was necessary for the older horses in those days also.

S. For the older horses certainly, but only under riders who belong to the fifty called by us rough-riders. However well broken a recruit horse may be, yet it may happen that in the very beginning of the recruit period a horse here and there, under an awkward rider, acquires faulty habits, of which he must be broken. You can no more entrust with this the older rider who has produced these faulty habits, than you can demand it of a recruit who has perhaps

been riding four or eight weeks only. The re-training of a spoiled horse must be done by a rider more skillful than the one who spoiled the horse. Therefore, it was the duty of the rough-riders, as we called them, the more so as re-breaking is more difficult than breaking a horse, which is a well-known fact.

H. I cannot imagine that a horse, which proved unruly once under an older campaign rider, perhaps in individual riding, should have been immediately turned over to the trainers to be broken anew.

S. That is out of the question. When such a thing happened, it was, as it is now, the duty of the instructor to proffer his advice in order to show the rider how to overcome the horse's temporary bad behavior. This teaches the older rider better than anything else, how to put up with horses not thoroughly obedient, and it is the best training in the immediate use of newly bought horses, which are more or less raw, as for instance, horses supplied for additional men at a mobilization or for replacing losses in war.

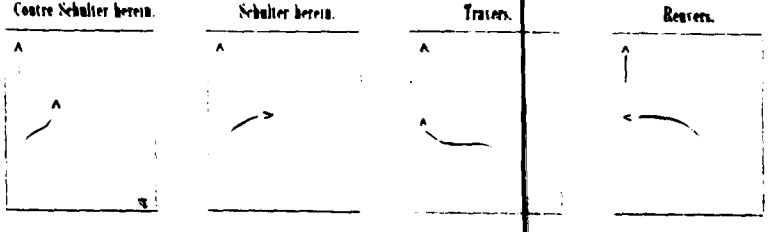
H. I think that with this class of riders the side paces were used sometimes.

S. Exceptionally yes, for the purpose of re-breaking, but not as a continuance of the training; we ought, however, to guard strictly against allowing men to ride the side paces who fail to show the necessary aptitude and have no conception of the individuality of the horse.

H. Although a side pace may not immediately produce the best results, I should think it would do no harm, as it is more or less of a bending lesson, though incomplete for the horse.

S. That is a very common idea which I oppose. I consider the incorrect riding of side paces absolutely injurious. It is better not to ride them at all, than to do so with faulty aids and ideas. For instance, when in the "Schulter herein"* the quarters "fling," *i. e.*,

*Freely translated means, "shoulder inward." It is a side pace, illustrated below. The squares represent the riding hall, the black arrow the direction in which the horse is going, the curved arrow represents the horse, and its position with regard to the side of the hall; the head of this arrow also indicates the direction in which the horse's head is turned. The translator is indebted to Lieutenant POWHATAN H. CLARKE, Tenth Cavalry, for information on this point.



(remain behind instead of being brought well under the horse), get into the habit of pushing against the outer thigh, and resist when a short, quick turn on the hind feet is required. It is only when the quarters are properly brought under the body, that the horse is able to raise his front legs properly. The "Schulter herein" is itself a lesson in the high school, the horse poising himself so to speak, on the hind feet. The principal point of this lesson is unknown to many riders and instructors, hence the object is often misunderstood to the detriment of the training. Faulty riding causes the quarters to remain behind, to fall away, instead of being brought well under and bent. In this manner the bending of the quarters is neglected, nor are the haunches and neck bent as is the object of the lesson. I assure you that, in the fifty years I have been mounted, I have become convinced that ten times more horses are ruined by faulty side paces than by accidents in riding across country. These accidents are diminished by a correct and moderate use of side paces as well as by rational exercise in terrain riding, and increased by faulty side paces and lack of exercise. It must be made a principle, that none but the very best riders be allowed to ride side paces. That I believe was also observed in SEIDLITZ's time, and for this reason I believe that the re-breaking was mostly done by the rough riders.

H. Did they have time enough for it? It must have happened that one man had to ride more than one horse. Did it not cause a lack of horses available for the other riders? Must it not have happened, that a recruit or older rider, while his horse was being re-broken, became dismounted for some time, and thus got out of practice?

S. No! We figured on fifty rough riders, *i. e.*, firm riders, thirty of whom besides riding their own horses, broke the remounts of the first and second contingents. This leaves twenty rough riders to re-break here and there a spoiled recruit horse, or those of the twenty older but less proficient riders. To prevent the training of such a rider from being interrupted while his horse was being re-broken, he was perhaps given the horse of the rough rider who was doing the re-breaking, for a few days. It is not supposed that in this short time he succeeded in spoiling this horse also.

H. And how during the drill seasons?

S. Then the re-breaking ceased, as well as during the great fall maneuvers.

H. How strong do you think the squadron turned out during the drill season and the fall maneuvers?

S. I should think that the remounts of the older contingent

were turned out, *i. e.*, one-tenth of the effective or fifteen per squadron; at the same time the furloughed men and "Freiwæchter" were also probably called in, which we have counted as one-tenth of the effective, or fifteen per squadron. This probably gave an increase of two files, *i. e.*, a platoon of fourteen files.

H. I should not think that furloughed men and "Freiwæchter" were put upon the old remounts.

S. Hardly; they were probably put on the well trained horses of those rough riders who had ridden those remounts in addition to their own, and now kept them for drill.

S. In this way it was possible for the remount, other things being favorable, to remain fully three years in the charge of the same rough rider.

S. Certainly; and I consider it a great advantage, as it fosters the love of the man for the horse.

H. There; we have produced an ideal picture of a squadron of the past century. Do you believe that all squadrons were so excellent then?

S. We set up ideals without ever coming up to them. In all man does, there are deficiencies and weak points. We all cook with water only, and in the past century they also cooked with water only. Some individual squadrons, however, closely approached the ideal; for instance, the body squadron of the regiment, whose chief SEIDLITZ was, and whose service he superintended personally. The result has been brought down to us by history.

SOME ENGLISH VIEWS OF THE MOUNTED ACTION OF THE AMERICAN CAVALRY.

IN the discussion which followed the delivery at Aldershot, of Major G. F. R. HENDERSON'S two lectures on the American Civil War, the following remarks were made by Lieutenant-General Sir EVELYN WOOD:

February 9, 1892.—"I do not propose to trouble the meeting with any observation beyond trying to induce some of our cavalry friends to look up the matter from their *point of* view before we have the pleasure of listening to the second lecture, because I think a great deal of interest has been created in the subject amongst cavalrymen. Was cavalry really employed as cavalry? A general officer of cavalry, who I am sorry to say could not be here tonight, wrote to me about ten days ago and said he was anxious that the right line should be taken as regards cavalry. He held that the views of the lecturer were wrong, and referred me to the 'History of Cavalry,' written by Colonel DENISON, and 'Modern Cavalry,' by the same author. I recommend those interested in the subject, and to whom time is no object, to read the work by the Comte de Paris; it is beautifully written, but is long—seven volumes—and those who are accustomed to have their military reading made easy for them may find it rather difficult to gain access to the author's views, owing to the absence of headings and marginal notes. I can only find one place in which mention is made of American cavalry acting as cavalry; I will give my references to the lecturer, or to any officer here, and should be glad if he would show us in the next lecture whether the cavalry really did act as cavalry."

February 16, 1892.—"I told you last week that a general officer of cavalry had written to me at length on this subject. The reporter put it *the* general officer of cavalry, but I meant General KEITH FRASER. Well, he disagrees with the lecturer; he thinks and holds that the cavalry acted as European cavalry. However, my present point is to mention that he asks me to call upon *some* unprejudiced officer to throw light upon the subject. I tried to guard myself against prejudice and I asked you to look up some authorities, and last week I mentioned three of them. I looked through them myself and gave them to other officers, but we could not find anything to

support the General's contention. Now he writes that Colonel DENISON was not an eye-witness like the Comte de Paris. The Comte de Paris speaks of the Brandy Station action as the first and almost the only case in which cavalry did anything approaching the ordinary rôle of European cavalry. What I expect is really running in General FRASER'S mind is the question of our mounted infantry, which I want to see maintained, but only as Sir BAKER RUSSELL has laid down, viz., as aids and assistants to the cavalry, to be kept in the rear, maneuvering in its own way, to protect the baggage and guns, and to help the cavalry to carry out some of those duties which fritter away its strength. I should be with General FRASER if I thought we were going to establish in mounted infantry another force of cavalry, so there is only this difference of opinion between us. I think it is rather hard on us, after he has told us to consult several authorities, to ask us to find some unprejudiced officer to give an opinion on the matter. There are two or three cavalry officers present who will perhaps say whether I have fairly cited those authorities."

In order to assist those interested in arriving at the truth, the following letter was addressed to Sir EVELYN WOOD by Major-General KEITH FRASER, Inspector-General British Cavalry. It is reproduced here by permission of the writer:

HORSE GUARDS, WHITEHALL, October, 1892.

MY DEAR SIR EVELYN:—In your letter of the 15th of February you say that having followed my instructions, which were to read the two books by DENISON, viz: "The History of Cavalry" and "Modern Cavalry," and the Comte de Paris' work, "La Guerre Civile en Amerique," you find in them nothing to support my views, which, as I have so often explained, are that the American cavalry were armed with sword, carbine and pistol, and that they charged, sword or pistol in hand, when opportunity offered, and acted dismounted only when circumstances required them to do so; and that they therefore did not, in any sense of the word, bear the smallest resemblance to our "mounted infantry."

I have made some notes of passages in the above mentioned works, which must have escaped your notice, as I should like to prove to you that I was thoroughly justified in my contention, if Major HENDERSON'S lectures have failed to do so.

I must premise my remarks by pointing out that it would be quite erroneous to classify STUART, ASHBY, SHERIDAN, PLEASANTON, STONEMAN, KILPATRICK, GRIERSON, etc., with guerilla chiefs and partisan leaders, such as MORGAN, MOSBY, FORREST, etc. You quote one of the latter, MORGAN, as having himself said his men were "not cavalry but mounted infantry." (I think you will find on page 444 of the "History of Cavalry" that the word is "riflemen," not "infantry," and that it was MORGAN himself who uses the expression.)

MORGAN is described by DENISON as "totally ignorant of the art of war, as learned from the books and in academies," and yet he

adopted the skirmish tactics for cavalry, and his men seem to have become well trained in time to act mounted on the same system as the regular cavalry. (Page 443, "History of Cavalry.") They could "charge at speed" at hostile cavalry (page 442, "History of Cavalry"), as they did so brilliantly at Shiloh in 1862. (DENISON. "Modern Cavalry," page 178.)

The famous STUART, and three out of his four brigadiers, were of a different stamp—regular cavalry officers, graduates of West Point. DENISON (pages 450, 451 of "History of Cavalry") says that "STUART's cavalry, though excellent in raiding and reconnoitering and in irregular warfare, was still accustomed to charge boldly in the open," and he refers in proof of this to HEROS VON BORCKE's descriptions of the "impetuous and furious charges" of that cavalry.

At pages 433 and 484 of the "History of Cavalry" you will find mention of "charges at speed," etc., "impetuous charges of Confederates," and of the battle of Brandy Station, which was "decided by LEE's and JONES's brigades impetuous charge against the Federal right, which swept all before it."

For a fuller description of this battle (9th June, 1863) I would refer you more particularly to "La Guerre Civile," (pages 104 and following), in which the Comte de Paris so vividly describes "the lines being intermixed in a desperate *mêlee à l'arme blanche*, the attacks en masse; and the pitched battle which the two cavalries fought out, and in which the artillery and infantry played but an insignificant part; the saber making a great number of victims. According to DENISON the numbers were on the Northern side 15,000 cavalry, and on the Southern 12,000.

For less important combats of STUART's cavalry with "*l'arme blanche*," read the description of Gaines' Mill (Vol. III, page 141 of "La Guerre Civile") and that of Barber's Cross Roads (page 351, Vol. IV), where PLEASANTON's Federal Brigade attacked STUART immediately, and where the Eighth Illinois Cavalry under FARNSWORTH, (not the one who was killed in a cavalry charge shortly afterwards at Gettysburg) greatly distinguished itself. See also the description given (at page 28, Vol. V, of the same work) of the fighting at Kelly's Ford "*à l'arme blanche*," when LEE finally charged with the energy of despair after long hand to hand fighting between different regiments, and (at page 66) the account of the sanguinary combat at Todd's Tavern.* In the same volume (V, page 112), the charge of two regiments of Federal cavalry is described as "having saved the right wing of the Federal army."

FORREST, the Confederate leader, who organized a corps of volunteer cavalry at the beginning of the war, was, like MORGAN, "totally uneducated to the military profession" (DENISON). Let us see with what truth he has been described as a purely "mounted infantry" officer:

"With characteristic impetuosity ('History of Cavalry,' page 456) at Monterey, a few days after the battle of Shiloh, in 1862, FORREST

*Hazel Grove.—[EDITOR.]

decided to charge boldly against immensely superior numbers of the foe. The enemy had no time to rally; FORREST was upon them like lightning, and with swift play of saber and rapid firing of the deadly revolver the flying infantry and horsemen were pursued with merciless carnage. FORREST was severely wounded. At Trenton, in December of the same year, FORREST charged the enemy with a portion of his cavalry mounted, taking 400 prisoners, 1000 horses, many wagons, and immense supplies of ammunition, all obtained by a gallant charge of about 200 horsemen." ("History of Cavalry," page 437).

At Parker's Cross Roads again FORREST at the head of seventy-five horsemen, "charged boldly at the guns, dispersed the gunners, threw the infantry support into confusion and carried off the caissons of three of the pieces. With his characteristic impetuosity he made a dash upon the wagon train of the enemy, seized it, and carried it safely off the field. Later he made another brilliant charge and, *dashing round the rear of the enemy's lines, carried off the whole* baggage train and supplies."

DENISON commenting on this (page 459 of "History of Cavalry") adds, "This is another illustration of the admirable fighting qualities of FORREST's cavalry, and of their ability to act boldly and effectively either mounted or dismounted; his favorite system being sometimes mounted, sometimes dismounted, as the exigency of the moment required;" and the Comte de Paris, writing of FORREST, says, that his force "was equally expert on foot as mounted."

In Vol. VI of "La Guerre Civile," you may read of KILPATRICK's charge with the Second New York Cavalry and subsequent pursuit, and the capture of Aldie, (page 161) and of the combat "*à l'arme blanche*" (at page 163) in which the Colonel of the Fourth New York Cavalry charged without a sword, being under arrest.

Finally let me ask your attention to the battle of Gettysburg, when, according to the Comte de Paris (Vol. VI, Chapter VI of "La Guerre Civile), there was a "terrible struggle *à l'arme blanche*, a general mêlee with that weapon, charges and counter charges, etc."

The Federal cavalry, so-called "mounted infantry," which ultimately numbered about 80,000 men, was armed with sword, carbine and pistol. *It never carried a rifle from the beginning to the end of the war.*

If our mounted infantry are prepared and intended to play the rôle of the American cavalry, as shown in the cases which I have quoted, the sooner they are similarly armed the better, and then indeed they will be useful (as an increase of trained cavalry seems an impossibility) in swelling the number of mounted men in our attenuated cavalry division; whereas at present with their horses (which are only to be used, as I understand, as a means of conveyance from one place to another) they would be, I fear, a heavy incumbrance to it.

In conclusion, I must quote the words of a late West Point professor on this subject: "As regards the cavalry of the Army of the

Potomac, which has been styled so-called cavalry by some distinguished English officers; in spite of the fact that many of its members fought mounted for four years under professional cavalry soldiers as leaders, this corps, which as early as 1863 numbered 18,000 sabers, carried from the beginning until the very close of the war the saber, pistol and carbine; its drill and tactics were based upon the French Drill Regulations of 1841; and it never failed to charge with the saber when necessary, nor hesitated to dismount and combat with its carbines, on ground unfavorable for cavalry, against cavalry, infantry or artillery. It will no doubt raise a smile of sarcasm on the countenances of many of the cavalry veterans of four years of a hard fought war, many of whose bodies bear the ugly scars of saber wounds received there, when they learn, after many years of peace, that their wounds are fictitious; that they were not cavalrymen, and their brilliant charges are a figment of the brain."

Believe me, dear Sir EVELYN, yours very truly,

KEITH FRASER.

To Lieutenant-General Sir Evelyn Wood, V. C. G. C. B., Aldershot.

The following quotations, which seem to have escaped the attention of General FRASER, might, out of the unlimited number available, have been added to those already made. Both are taken from the works of English military writers of high repute:

"But not less than any, even the most 'dashing' European cavalry, were they *ready and eager to draw swords and charge on fitting opportunity*. An unwillingness to do so has been charged against them by two recent English military writers who, ignoring or not being aware of, the more effective system above set forth, have judged them entirely by the standard of the 'dashing' European cavalry theory. This backwardness to charge *may* have existed in the early years of the war, from defective individual instruction in riding and swordsmanship, making the half-drilled men of the Northern horse lack confidence in themselves; but in 1864 and 1865, all idea of perpetrating the reckless, ineffectual folly of a mounted charge, except under circumstances manifestly affording a favorable opportunity worth the loss of life, had been systematically eliminated from their practice. And though a *charge was resorted to without hesitation* when there were commensurate results to be gained (see pages 77 and 98), as a general thing, the Northern cavalry produced ten times greater good, *without any considerable loss to themselves*, by making a liberal use, dismounted, of their terrible 'repeating fire,' etc." (Sir HENRY M. HAVELOCK, "Three Main Questions of the Day," page 48).

"General MERRITT, with three brigades, drove the Confederate right, by several impetuous *mounted* charges, into their outer lines of temporary works; then dismounting, they attacked these lines and drove the enemy out of them. Everything was now ready for the general attack. The Fifth Corps was ordered to swing the right forward, and, turning the Confederate left, sweep it into the main works at Five Forks. This was soon done, and the Federal infantry, pressing on, attacked the works from the east. At the same time, the cavalry, as we have said, having driven the enemy into his works from the west, now proposed to make a simultaneous assault upon the lines from that direction. Three brigades were dismounted and made the attack vehemently. The slaughter was terrific, and several times the men, appalled by the carnage, staggered back, but they were urged and cheered on until the enemy, exhausted and attacked on three sides, rushed to the rear, which was the only escape open to them. The dismounted cavalry swarmed over the works at several points, meeting their comrades of the Fifth Corps of Infantry, who had entered on the opposite side. MERRITT's *mounted* reserve brigades dashed forward in pursuit, at once, 'and riding into their broken ranks, so demoralized them that they made no serious stand after their works were carried, but fled in disorder;' 5000 or 6000 prisoners were taken, and the fugitives cut off from LEE's army. This caused a total loss of about 13,000 to the already weakened legions of the Confederate cause. The battle of Five Forks virtually decided the fate of the war." (DENISON's "History of Cavalry," pages 478–479).

THE NEW REVOLVER.

By First Lieutenant EBEN SWIFT, Fifth Cavalry.

THE question of weapons is a serious one with a soldier. Upon his arms depend his strength in battle, his honor and his life. An inefficient weapon may make cowards of brave troops; it may ruin their discipline, and it may defeat the wise plans of their leaders.

Our country has made no haste in adopting the magazine gun and the small caliber for infantry, although most of the nations of the earth have agreed upon these points. But while so slow in this respect, we have been rapid in another. We are early in the field in adopting the small caliber for the revolver, a weapon which should be used at close range entirely.

The new arm is a self-ejecting, single and double action, caliber .38, Colt's revolver.

In the report of the Chief of Ordnance for 1891, it was stated that one hundred of these revolvers had been on trial with nine troops of six regiments and that the reports which had been received, with two exceptions, favored the Colt's revolver and considered it a very decided improvement on the caliber .45 Colt then in service. In this manner the responsibility for the change appears to be placed squarely upon the cavalry service itself.

The adoption of the new revolver was a surprise to some of us who had made an unfavorable report after a long and careful trial. Moreover, we had discussed these matters with many officers and others interested in such things, but no one seemed to think that improvement lay in the direction of a small caliber.

A recent discussion of cavalry equipment in the *Journal of the Military Service Institution* has been engaged in by a number of officers who are well qualified to speak, but of those who mention the revolver only one briefly advocates the .38 caliber, while the others

are earnestly in favor of an increase of caliber, or other changes made with a view of increasing the stopping power and effectiveness at short range. At various times in the Cavalry Journal these questions have been stated with more or less fullness, but no argument, save individual preference, has been given in favor of this change.

The board of ordnance officers which reported upon the new revolver in 1889, very carefully stated that they had no means of knowing "whether these arms have the necessary stopping power." The text-book on small-arms in use at the Military Academy says: "The limit (in reduction of caliber) is fixed by questions of internal ballistics, and also upon the nervous shock communicated to the animal struck; upon the shock is thought to depend the stopping power of a bullet that does not kill." We have, however, no information that these important points have ever entered into consideration in adopting a weapon upon which we are taught to depend largely.

Advocates of a change have attached importance to the self-ejecting principle in revolvers. In the trial test of the .38 Colt at the National Armory, for rapidity of loading, firing and ejecting, it was found to take one minute and thirteen seconds to fire eighteen rounds, commencing and ending with chambers empty. In a recent test at an army post this feat was easily performed in one minute with the old .45 Colt.

As a matter of fact the new revolver is a slow-working affair for several reasons. In the first place the cylinder is thrown to the *left* before ejecting and loading, which makes the latter operation an awkward one; in the second place, each cartridge must be placed accurately into the cylinder and pushed home. In the old single-action revolver the recess in the frame, into which the gate fits, serves as a guide for the cartridges, and they drop easily into place, while the operations are performed with two hands instead of one.

These experiments were performed on foot; on horseback the difference between the weapons is more marked. There was no difficulty in working the single-action Colt while holding the reins in the left hand, but it did seem slow. Now the manual will require you to hold your reins and your revolver as well in the left hand, while you find some way to insert cartridges with the right hand into a cylinder, which is twisted to the left.

A double-action revolver may be easily fired from a pocket, and it may be suddenly poked into a man's face with great effect. A soldier wears his uniform; his mission is well known, and such sur-

prises will not be called for in his ordinary work. In the hands of recruits such an arm would be extremely dangerous, and more practice would be required than with the single-action.

The double-action can be fired at a rate of six shots in less than three seconds; the single-action can be fired at a rate of six shots in less than six seconds. Thus it seems to be a question of whether you shall fire one or two shots in a second. It is fair to suppose that one shot per second will be fast enough for most purposes, and that the slight advantage in favor of the double-action will be more than balanced by the increased accuracy of the single-action revolver.

Civilized communities are generally prejudiced against the carrying of weapons. On this account most men, even those who are obliged to be well armed at all times, do not wear their arms in plain view. This has been the principal reason for the use of a small revolver—that it may be readily concealed. A soldier's arms are his badge of office, and must never be hidden.

It is possible that many officers are inclined to look favorably upon this change because they are dissatisfied with the old pattern. It is certainly a serious matter to have a number of revolvers disabled at every practice. It is a defect which has been complained of for a long time, and appears to be due to inferior workmanship in the small parts. At the last competition at Fort Leavenworth I lost an entire score on this account; Lieutenant GOLDMAN's revolver would not work, neither would Lieutenant BLUNT's, which I borrowed after breaking my own.

Those who are familiar with the excellent quality of the earlier issues of Colt's revolvers are surprised that these faults should exist. Some will remember firing thousands of rounds from a Colt's revolver without changing a spring. Others will be found who assert that Colt's revolvers, purchased at private sale, do not get out of order.

Major H. E. C. KITCHENER, now a major-general, I believe, in the English army, in the year 1886 wrote a valuable article on the use of revolvers. He appears to have consulted a great number of officers who had experience in that savage warfare in which they had to deal with a fanatical enemy whose only hope of heaven was in killing and being killed. There are no fiercer fighters on earth than these Afghans, Zulus and Arabs, who, armed with hand weapons entirely, were able to run over well disciplined troops armed with breech-loading rifles. The officers were earnest in declaring that toy pistols would not do for such service; that there must be no doubt of the ability of the weapon to drop an adversary in his

tracks. Many would not trust the caliber .45 and favored the double-barreled pistol caliber .577 and the four-barreled pistol caliber .476, on account of their stopping power. In the Afghan and Egyptian campaigns nearly all the officers of the Tenth Hussars armed themselves with these pistols instead of revolvers. Much was said in favor of "smooth-bore barrels for weapons whose use is essentially at close quarters, and from which it is desired that a heavy shock to the object aimed at should be given." Others spoke in favor of buckshot cartridges, which give a terrible shock. Express bullets, such as are used in hunting large game, were suggested for revolvers which were called on to "stop" equally wild men. Increased stopping power was also given by cutting off the pointed end of the bullet.

Colonel METHUEN said: "You will scarcely find one officer who has had practical experience recommend a *revolver;* he will urge you to use a *double-barrel horse pistol.* The bullet (revolver) is not sufficiently large to give the required shock. Personally I do not intend ever to use a revolver, as I mean to stick to my pair of Holland's horse pistols."

Major KING-HARMAN spoke of officers' revolvers as useless gimcrack things. Lieutenant-Colonel BRABAZON, Tenth Royal Hussars said: "I can only say that I infinitely prefer a double-barrel and breech loading pistol carrying a heavy bullet and with a simple loading action to a revolver. I have seen so many lives jeopardized through reliance being placed in revolvers stopping a man. This a revolver seldom does. I could enumerate many cases, some of which have come under my own personal observation, and in one case when I myself was near being the victim of confidence placed in a revolver, when the revolver, though hitting the man aimed at, failed to stop him. The revolver bullet is too light and the charge is too small to stop a strong man, unless you happen to hit him in a vital part. A pistol carries a heavier bullet and efficaciously stops your man. Lieutentant Lord AIRLIE told me he owed his life at Abu Klea to my having given him one of my pistols, with which he shot the man who wounded him; he dropped him dead."

On the subject of the English government revolver, Colonel BARROW was quoted as follows by an officer of the Nineteenth Hussars: "BARROW used to get very warm on the subject, and thought the present weapon perfectly useless against Arabs, as the shock is not sufficient against them in their charge unless you are lucky enough to hit them in a vital spot. I remember he used to say that he would as soon go into action with a pop-gun; and he carried, as do many

others, one of those four-barreled pistols of WILKINSON'S, a much heavier weapon, the shock of which would bring down a bullock."

Major KITCHENER gave another instance, of an officer killed by a Zulu at Isandlana. The officer shot the Zulu twice, but was assegaied nevertheless.

These experiences of English officers are sufficiently instructive, but one more will be given.

Major EDEN-BAKER, in an article on the "Arming of Gunners and Drivers," wrote as follows in 1888: "There is very little satisfaction in putting bullets into a man which are certain to kill him, if you cannot succeed in stopping his spearing you or cutting you down. * * In 1879, I saw Captain H., of the Bengal Cavalry empty five barrels into the back of a Ghazi, who was running 'amuck' through camp, at less than five yards range without stopping him. A Martini-Henry bullet pierced him as well, and yet he kept on till brought up by an infantry bayonet. I examined the man myself afterwards and found the marks of all six bullets in his body. I consider the service revolver should throw a heavy ball of .5 inch to .55 inch diameter, and I am half inclined to believe a flat head to the bullet would be an advantage."

If such things as these are said of the English caliber .45 revolver, carrying 250 grains of lead and eighteen grains of powder, what would these gentlemen think of our new .38 caliber, with its 150 grains of lead and about the same powder?

And so we might go on and write a book full of instances in our own land, where the revolver has delivered mortal wounds, but has left its victims with the remaining strength to kill numbers of assailants. This is the record of mining camps, round ups and frontier towns; it is the story of bar-room brawls, and border feuds, and army mutinies, wherever they have been.

After all that has been said and written, it seemed plain until recently, that no point was more clearly settled than this, that the object of the revolver bullet was shock and not penetration. A blow like that delivered by the fist of a pugilist, a sand-bag, a "billie," or the hind-foot of a mule, only more sickening in its effect, was what we hoped to see accomplished by the service revolver.

THE CAVALRY HORSE—HIS MENTAL AND PHYSICAL NATURE.

BY CAPTAIN A. G. HENNISEE, EIGHTH CAVALRY.

EVERYBODY with a practical knowledge of cavalry knows that it requires well trained horses to make good and efficient cavalry—that excellence in other respects is not all that is required. The German cavalry is now attracting attention on account of its numbers, and on account of its ability to go at rapid gaits over long distances and considerable obstacles, and still to keep in good order; this ability is not so much due to the good riding of the men as to the training of the horses. The Germans have found that training should commence when the horse is four years old; that he should be trained by the very best horsemen a considerable time before he is placed in rank; that the old and well trained horses are of great assistance in teaching the new men to ride; and that inexperienced men should never be given new and untrained horses. "The old horse trains the recruit just as much as the experienced rider trains the new horse."

In this country we have not given much attention to the proper training of horses; certainly not as much as the subject deserves. It is not necessary for every cavalryman to be a finished horse-trainer, but it is necessary that the most skillful men should be selected for this duty.

In order to be a good instructor, a man must have a fondness for the horse, and a good knowledge of his mental and physical characteristics. Ordinarily, we care little about the mental nature of the horse, so long as he is obedient and does as we wish him to do. We should know all about his intelligence, honesty, faithfulness and memory before we are competent to become his instructors; yet it is rare to find a person, among the many writers upon the horse, who mentions his mental nature at all.

It is difficult to find two horses alike physically; it is quite as difficult to find two alike mentally. The horse is deficient in reasoning powers, has only one idea at a time, does not necessarily know on one side of his brain what he knows on the other; in other words, he may perform movements and acts toward one side, or in one direction, but must go through similar training to learn the same movement toward the opposite side, or in the opposite direction. Many horses will turn or passage toward one side with facility when they know nothing whatever about the same movement to the opposite side.

The usefulness of the horse depends entirely upon his training. He has no idea how to perform any duty until he is taught; he cannot be trained by seeing another horse do what is required; he must learn through his own personal experience. He has, however, an excellent memory, is very responsive to kind treatment and, upon the whole, seems fitted by nature to be man's faithful and obedient servant. With all his strength the horse is a very timid creature, and must be accustomed to sights, sounds and smells before he can be considered reliable or trustworthy. While horses are generally honest and obedient, some are cranky, erratic and at times crazy; others are naturally tricky and dishonest; but, with proper training, these peculiarities are much modified, even if they do not entirely disappear.

After understanding the general mental characteristics of the horse, we are better prepared to communicate with him, to appeal to his mind, to understand his thoughts by his actions, to convey to him the idea of what we want him to do, and to know when he understands what we mean to convey. We communicate with his brain through his physical nature, and through his physical nature read his thoughts. As mentioned before, the horse is very timid; we must overcome his timidity and gain his confidence before we can hope to make progress in training him to be useful. He is suspicious and on the defensive until his confidence is gained. We commence with his head and begin to gain his confidence through his senses of sight, smell, feeling, hearing and taste. No quick movements should be made; wild men and wild animals are suspicious of quick movements. The early training should be progressive, commencing with the simplest ideas; it must be slow enough for the horse to comprehend what is intended to be conveyed, and must be repeated until the horse shows by his actions that he comprehends and responds to the wish of his instructor. The moment he executes what is required, he should be petted, made much of, and allowed to remain

quiet a short time; by this he is assured that he has done well, and is encouraged.

In the beginning, in fact until the horse is well trained, it is necessary to make a distinct and well-defined pause after each particular movement that he is required to execute, or he is liable to be confused, not to know what is required, not to know where one movement ends and another begins. After being mounted, we change the balance of his body by the use of the leg and rein and inform him what we want him to do, always using the same sign of leg and rein to convey the particular idea.

It may take a considerable time to overcome a horse's timidity. Horses differ greatly; some may be afraid of certain sounds and sights that others are indifferent to; it may take a considerable time to overcome timidity of a particular sort. The principal sign of timidity is watchfulness. The confident horse has a steady look. As the horse becomes trained we find that he is inclined to adopt the disposition and ways of his instructor. Feeding the horse from the hand, patting him gently on the neck, rubbing him gently about the forehead, allowing him to put his nose against the hand frequently, assists greatly in gaining his confidence, in quieting his suspicion and in making him gentle.

If the horse is not gentle about the head, it is not safe to trust his heels. His brain must be trained if we would make him reliable and useful. It is seldom that a horse has a vice that cannot be cured by kindness and judicious management if it is kept in mind that his brain must be trained.

With a very careful inspection of horses for cavalry, occasionally one is purchased that is near-sighted or has distorted vision. Training cannot overcome this defect; such a horse is never safe, and is not fit for cavalry. High feeding, with insufficient exercise, causes the senses of the horse to become confused; brings on a peculiar giddy state of the brain, and while in that state, he is liable to do strange and unreasonable acts, although he may be a well trained and gentle horse. Instead of being afraid of a man, a gentle and well trained horse will generally go to him voluntarily; the presence of man quiets his fears; he relies upon him as a friend.

If we would have the horse in the most satisfactory condition for use, he should be kept in the best mental and physical health by proper and judicious feeding and exercise.

The health of the horse requires that he should have an abundance of fresh air, sunshine, good, pure water, well cleaned grain of sound quality, and well cured hay, free from dust and must. At

least two hours' exercise should be given the horse daily. The best is that which he will take himself if out on herd. He is sure to get the kinks out of himself if allowed to do so in his own way.

Like other four-footed creatures, the horse carries considerably more than one-half his own weight upon his front legs. From data in books and from seeing horses weighed, I have come to the conclusion that a fair estimate of the weight of horse and rider borne by the front legs is sixty per cent., leaving forty per cent. of the weight to be borne by the hind legs—this, with the center of the saddle on the middle of the horse's back. I say a fair estimate, because much depends upon the position of the head at the time the front and hind parts are separately weighed. A fair conclusion can be arrived at only after considering the average of several horses.

We are informed that the balance of the horse and his lightness in hand depend upon the proper carriage of his head. Paragraph 365, cavalry tactics, adopted July 17, 1873, and used till the spring of 1892 (nineteen years), contained the following: "Place the saddle on the horse's back well forward on the withers." The cavalry drill regulations now in use (paragraph 262) directs us to "place the center of the saddle on the middle of the horse's back." Experience will soon convince most riders that the latter is the better way, and the most natural to horse and rider. Nine soldiers out of ten will saddle the horse well forward on the withers as they still follow the old tactics, without seeming to know the new and better way. Another reason for putting the saddle well back is that pressure from the tight girth does not come so directly over the heart and lungs of the horse. The cavalry horse generally gives out first in his knees and front feet; this is due largely to the fact that the horse is compelled to bear an undue share of the weight of his rider on his front legs. Many such horses, after being condemned and sold for being too much used up in front for a man to ride, work in harness from three to ten years in a manner quite satisfactory. A horse saddled too far forward holds his head high, his nose up, in his effort to inform his rider that his withers are pinched, and that his front legs are being imposed upon. He is out of balance; a horse so saddled goes in a manner uncomfortable to himself and his rider. As mentioned in another place, the horse should never get an idea that he can resist. If the girth is made very tight and the horse is mounted on the spot where he is saddled, he is liable to resist, and such resistance is very likely to increase at a rapid rate; success will cause him to try the same thing again. Any horse, especially an

untrained one, should be led thirty yards or more after the saddle is tightened, to accustom him to the discomfort, before he is mounted.

In the army it is very necessary to have one general system of training, one of riding, one general style of saddles and bits that will suit almost any horse and man accustomed to use that fixed style. With a special bit for each horse, or with an adjustable bit, an emergency necessitating change would derange the ideas of horse and rider to an extent that would practically make them useless for a time, probably until the emergency had passed. The few cavalry horses that an authorized curb bit does not quite suit should be trained till they are thoroughly accustomed to it. They will fare better with a fixed style of bit than with a variety of bits or of one general pattern with adjustable parts, subject to change by a man without skill. The man who does not adjust his curb-strap properly would not be liable to do better with his adjustable bit. The bit with fixed parts is the most merciful to the horse; the ignorant rider cannot change it to suit his own whim. Another common fault is that soldiers ride with stirrups too long. A long stirrup can be tolerated at the walk, but a shorter stirrup is necessary at the trot and gallop. It is the constant duty of a troop commander to see that the bridles and saddles are properly placed and adjusted.

We know something, at least, of the effect of custom or habit on men with strong reasoning faculties. On men and creatures with low reasoning powers the effect is still more marked; they adhere to habit and really dislike change. In training a horse, he should perform the acts and movements required until they become fixed habits; but he must not be wearied and disgusted with frequent repetitions of the same lesson. Do not fail to flatter and make much of him every time that he does well, and he will try to please.

The cavalry horse should be trained to trot well and freely. He should be kept at it until he goes with ease to himself and his rider. The trot equalizes the work of his feet and legs; at the gallop the legs in advance do the most work.

Horses are generally scared, and resist when side-lines are put on until somewhat accustomed to them. Proper training tends to remove timidity and resistance in the horse. He should not be placed in a situation where he can resist if it can be avoided. He must be trained to go in side-lines, the chains of which should never be more than eighteen inches long; if longer than this he will be able to get his feet far enough apart to make a vigorous kick; if he breaks the chain once he will try the same thing with the next pair. Attach the side-lines to the front pastern, then to the hind one; take the

horse by the halter or bridle and slowly lead him in a small circle toward the side hobbled. He takes a short, easy step on the inside, and a long step on the outside of the circle. If excited, stop and quiet him; in a few minutes he will cease to resist. After he walks unattended for fifteen minutes, put the side-lines on the other side of the horse, being careful to take the same pains in educating the other side of his brain; after that he will not forget how to walk in side-lines.

However gentle and well trained a troop of horses may be, it is advisable to put on side-lines the first time they are turned loose on herd after leaving a post or permanent camp; after that, fetters on gentle horses are hardly necessary. To avoid sores and injury to heels and tendency to lateral gaits, they should be used only when absolutely necessary. It may be advisable to side-line such horses as are inclined to excite others; fetters on the front legs will prevent the horse from trotting, but will not prevent the average horse from running at half speed.

In training the horse to the report of fire-arms, the plan formerly was to fire as the horse was being led into the stable to be fed. I have found it positively demoralizing to untrained horses to fire about them unless mounted; the timid horse will move and try to get away from the report of fire-arms whenever it is possible, and it is always possible except when the one who fires is on the horse's back, and fires over the center of the horse, perpendicularly to his spinal column. Having no other means of getting away from the sound, the horse will squat somewhat, but will not lift his feet; practically, he is still; pat him on the neck gently a few moments. After he is quieted, fire again; he will soon cease to mind it. Next, fire over the center of his head, taking care not to burn him with the powder, and to elevate the muzzle to modify the sound as much as possible. He will lower his head to get away from the sound, but will not lift his feet. Fire slowly when standing and walking; fast movements tend to excite him, and should be avoided in the early training. After a little practice he will cease to resist at the sound of fire-arms.

The cavalry drill regulations, Par. 447, requires a horse to be thrown in order to accustom him to the report of fire-arms. I must say that I do not believe in the plan. I have never had trouble in accustoming any horse to the report of fire-arms by shooting *vertically over his spinal cord*, the center of his nervous system. The plan is sure of success, even with untrained horses. I have known a case in which shooting about a horse when he was down and tied, did no good whatever; he was an old horse that had been spoiled in training; would rear every time that the rider raised his pistol. He was completely trained in a short time by having a pistol fired over his head when he reared the highest.

The cavalry horse should be carefully trained to maintain regular gaits at the walk, trot, canter and gallop; irregular gaits tend to worry and fatigue horses; great care should be taken to avoid them. I have known many cases where a combination gait of about five miles an hour was used at the head of marching troops, a gait very trying to horse and rider; horses become nervous and irritable, men feel wicked and become sullen. An officer at the head of marching troops should see that the rate of march is natural and as comfortable for horses and men as circumstances will permit.

It is very reasonable to conclude that the horse's natural timidity will be increased by punishment. Extreme kindness, gentleness, slow movements, and an abundance of flattery are necessary to use in horse training. The horse has little or no affection, but he can be won by attention, feeding from the hand, and flattery.

After a horse for cavalry is put in training, he should be used only as a saddle horse. It spoils a horse to be changing his occupation; it deranges his ideas and confuses him. Men have a variety of occupations. There are a dozen different kinds of occupation among the wood workers, and as many among the metal workers.

Even with the most careful inspection of horses for cavalry, many prove to be unsuitable. Generally, four-year-old horses that are up to the standard for cavalry, that have not had much training or use of any kind, are the most suitable; they are sure to improve and develop with generous feeding and proper training. The muscular development of men or animals is in the line of use. A *young* horse used exclusively for riding will develop and improve for that particular use.

The Eighth Cavalry has received horses at various times from Missouri. Some of the best horses were supplied in the St. Louis market, but some have had backs unshapely for the saddle; others have had bad feet with thin walls; others have had weak eye-sight from being kept in dark, foul stables during long winter weather; others have been trained to go in harness with an overcheck, and never carry the head as a good riding horse should do.

Horses should be purchased in a section of the country where well bred horses are raised. There are sections of the West where horses are raised in large numbers; where very few, if any, are *good enough* for cavalry service. That they are cheap and free from de-

fects is not enough; the Government does not want them at any price. It does not cost as much to produce a four-year-old as it does a fully developed horse, yet contractors seem to expect as much. It should be thoroughly understood and rigidly adhered to, that the Government is willing to pay a fair price for good horses, and that no others will be accepted. If inferior animals are accepted, only such will be offered; everything possible should be done to encourage the breeding of suitable horses for cavalry. It may be said in time of peace, when there is nothing to do, that cheaper horses, not quite up to the standard, will do. It is absolutely necessary for the Government to establish a standard, and to tolerate nothing inferior. If inferior horses will do, why not inferior arms, ammunition, war material, and inferior men, from the highest to the lowest? There is danger in lowering the standard of excellence of anything that pertains to the honor, peace and welfare of a nation.

In localities where good horses are raised, the standard of quality is higher than where only inferior ones are raised. It would seem wise to purchase only in localities where the standard is high, where good horses are common.

No horse for cavalry is accepted until he has been ridden and handled enough to be passably gentle; then he is in condition to commence his training. The time to train a horse is when he first joins a troop; he should be trained every day. It should be a habit with him; a business, and not an incident of his life. Recruits and horses are in a dazed condition when they first join a troop; that is just the time to train them. Keep them in the dazed condition as long as possible by not giving them time to get out of it; when they begin to assert their independence, this is a sure sign that they are getting over the dazed condition.

A very small percentage of the men who enlist in the mounted service have any practical knowledge of the horse or of riding. It is not an easy matter to find men enough in a troop who are natural horsemen, to handle and train new horses properly. Many horses are spoiled in training, become unmanageable, and are condemned and sold as unsuitable for cavalry service, because of the want of proper skill in training.

Horse training not being an exact science, the trainer is compelled, naturally, to suit his work to the intelligence and adaptability of each individual horse, and to make such changes in the method as circumstances require. All training should be under the personal supervision of a competent and skillful riding-master, one with good

observation, and thoroughly competent to impart instruction. Successful horse training depends much upon what the trainer does, instinctively, at the instant that action is necessary. Many men never acquire this instinct; they are not suitable to train horses; the horse dislikes and is suspicious of such men—they are not natural horsemen.

To suit the conditions in our cavalry resulting from the short term of service of the men (to assist in making them efficient horsemen in the short time), additional means are necessary. A competent riding-master should be appointed in each regiment of cavalry, and a competent assistant, with the rank of sergeant, should belong to each troop, in addition to the sergeant now allowed. The assistant should be excused from guard, fatigue and other duty that would take him away from his proper duties with his troop. There are so many other duties required of a non-commissioned officer that none can be expected to become efficient instructors in horsemanship (to the extent required) unless the duty is specially allotted.

Books contain theory and many valuable suggestions about the proper way to ride and the proper way to train a horse; but the practice of these is an art that can be acquired only by actual experience. The constant care and judicious management, that can be exercised best by the man who thoroughly understands the subject, is necessary in horsemanship to assist the recruit and the young horse to become efficient in the shortest possible time. An incompetent instructor wastes time in experiment, because he does not know what to do; in his ignorance he is very liable to train improperly. A competent instructor makes the way easy for horse and rider, and reduces the time of instruction to the minimum.

The cavalry recruit is required to learn all the duties of an infantry soldier, and in addition, he is expected to know how to ride and be an efficient soldier mounted. He has no additional advantage to correspond with the additional requirements; he must learn all in the same short term of service as the infantryman.

The Government is at great expense in keeping up the cavalry. As a direct measure of economy, if for no other reason, it would be well to give more attention to all that pertains to the welfare of the horse; to his selection, training, feeding, housing and management; all useful knowledge possible should be communicated to horse owners and horse users throughout the country.

At the Cavalry and Light Artillery School to be established at Fort Riley, Kansas, I hope that veterinary practice, training, riding

and the management of the horse will receive due attention, and that all that pertains to animals necessary to an army in the field will also receive proper care. A few years ago we had no veterinary surgeons or system of horse-shoeing, worthy of the name; whiskey, cayenne pepper and tobacco juice were remedies too often used; paring the sole of the foot, contracted and cracked feet and bad shoeing were common. There has been some improvement in the last twenty years, but not so much as the subject deserves. If we regard the horse as useful only for war, that is sufficient to give him consideration; but he is even more useful in peace; he has been man's fellow laborer in building up the wealth of the world—a contributor to the means that has built up its civilization.

Army officers are detailed as professors of military science at colleges, and are otherwise engaged in imparting military knowledge and cultivating a military spirit among the young men of the nation. They are, however, imparting no instruction on the subject of animals for army uses. An army in the field must have cavalry and it must have wagon transportation. If our little army is to be used as a training school for this vast nation, let its training in all respects be as complete as possible, especially in such things as the militia are deficient in. The militia have no practical knowledge of the army horse or mule; the States make provision only for the kind of troops that will be useful to them, leaving the general government to provide for any and all deficiencies that an emergency may develop. The matter mentioned will surely be one of the deficiencies, and a very important one.

The army is maintained expressly for service in the field; any other service is incidental. The organization, training and management throughout should therefore be on the basis of field service.

Officers of the regular army will be required to supply all deficiencies in the militia in time of war that cannot be provided for in time of peace; they will be required to exercise a controlling influence in the field over a large army, practically all volunteers, with little or no knowledge of many requirements that are absolutely necessary to make such an army efficient.

Every officer of the regular army should have a sufficient knowledge of the use, care and management of horses and other animals, necessary to an army in the field, to exercise an intelligent control and supervision over them in case of necessity.

During our late war a very large number of horses died or were rendered unserviceable on account of the want of knowledge of how

to use and treat them, probably three or four times as many as would have been lost with judicious use and care. Like suffering and waste will occur again, during war, unless officers are instructed in time of peace in such matters.

Officers of foot troops have as much time to learn such things in time of peace, as officers of mounted troops. The subject should be included in the scope of their examination for promotion.

PROFESSIONAL NOTES.

THE NEW CAVALRY BIT.

By the time this number of the JOURNAL reaches its readers, the new cavalry bit, it is believed, will be placed in the hands of our cavalry officers, and the so-called Shoemaker bit will be withdrawn from service and consigned to the old iron pile, much to the satisfaction of both horses and riders.

As the new bit has been constructed in accordance with the principles and on the specifications laid down by the late Major DWYER, except that the lower branch is gracefully curved to improve its appearance and to prevent the possibility of the horse taking it into his mouth, the following extracts from Major DWYER'S "Bits and Bitting" are published, in convenient form for reference, so that the bit may be tried under the conditions considered absolutely necessary to its proper working.

It is hardly necessary to say that the bit for each horse should be selected and adjusted to the horse's mouth by a commissioned officer, who should see that the men understand *why* the bit is so placed, and then that no changes are made in its position except by his authority, after an inquiry made into each individual case.

It is not claimed that this bit is perfect, and therefore susceptible of no improvement, but it has been determined by actual experiment that it approaches, in its present form, more nearly than any other ever used in our cavalry, the ideal bit—one which will enable the cavalryman to get and keep perfect control of the horse, with safety to himself and without discomfort or pain to the animal he rides.

There is no doubt that the Ordnance Department, with its well known desire to improve the cavalry equipment, will make such changes in the bit, should any be found necessary, as may be suggested by the experience and careful observation of our cavalry officers, after a sufficient time shall have elapsed to insure a fair trial of it. Its official designation is "Cavalry Curb Bit, Model 1892."

EXTRACTS FROM "BITS AND BITTING."

"So far as possible, the bit selected for use on any horse should have a mouthpiece precisely so wide that, when placed in the mouth, it will fit close to the outer surface of the lips without either pressing on these or being subject to be displaced laterally.

"The best fitting bit, even when placed in the proper place, will not work well unless the curb (chain or strap) be properly constructed and exactly of the length required.

* * * * * * * *

"*The curb—strap or chain—must lie in the curb or chin groove, without any tendency to mount up out of it on to the sharp bones of the lower jaw*, otherwise it ceases to be a painless fulcrum, and renders the best constructed bit uncertain—or even still worse—in its action.

* * * * * * * *

"The only certain way of attaining this perfect painlessness of the curb-strap or chain, on which so much depends, is, *by placing the mouthpiece on that part of the bars (gums) exactly opposite to the chin groove.* We find here the portion of the bar (gum) of the horse's mouth best suited for the action of the mouthpiece—that space that intervenes between the grinders and the tusks, where they 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 frequently mares have no tusks whatever. It is therefore quite impossible to determine the proper place for the mouthpiece 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-strap or chain, 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 into his horse's mouth—let us suppose it 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 mouthpiece lies *higher* than it should; then the curb strap mounts up out of the chin groove and causes so much pain that the horse, to escape it, bores into the rider's hand.

* * * * * * * *

"A quarter, or even an eighth of an inch higher or lower, makes all the difference in the world. The headstall or cheek pieces of the bridle must, therefore, afford all the necessary facilities in the way of buckles and straps for the purpose of enabling the bit to be placed *exactly* where it belongs.

"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 mouthpiece shall come to rest on the bars (gums) 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 then be buckled in, 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 chain or strap 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 will 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 strap, it has already been stated generally; but each individual case will require a separate adjustment, and if the holes be either too close together or too far apart, it will sometimes occur that the difference of one of these will make the curb strap either too tight or too loose; new holes must then be made to remedy the defect. 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 mouthpiece, or bear back suddenly to escape it altogether; we therefore give him another hole, and drawing the reins gently as before, we observe whether, after the lower branch has moved through an angle of about eight degrees—bringing the mouthpiece 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 out his nose or shrinking back. If this be the case you are all right; but if the lower branch moves through a much greater angle than above—say fifteen to twenty degrees—before the horse yields perceptibly, then your curb strap will probably be too long."

REVOLVER PRACTICE—CORRECT AND QUICK POINTING.

To be conducted in a room, with a dark background, a strong light coming in at a window.

The recruit stands four or five yards from the window, facing the light. The revolver, unloaded and full cocked, is pointed at the eye of the instructor, who stands very near the place where the light enters, facing the recruit, that he may look into the barrel and see the hole in the recoil-plate when the pointing is correct.

First Exercise.—The revolver is pointed, with the hand resting against the body, near the right breast, the recruit looking at the instructor and not at the revolver; point and derange; repeat until correct pointing is easy.

Second Exercise.—Point as in first exercise. Holding the revolver pointed, move the hand slowly in the direction of the instructor's eye, nearly to the extent of the arm; bring back the hand to the body, keeping the revolver pointed at the instructor's eye. Repeat until the pointing becomes a fixed habit.

The instructor corrects the pointing as may be necessary; if correct, he can see the hole in the recoil-plate, whether the hand rests against the body or is moving toward or from him.

FORT MEADE, S. D., Feb. 24, 1893.

A. G. HENNISEE,
Captain, Eighth Cavalry.

WHY HE EXPENDED THE SOAP!

I reside at Fort Apache, and my name is TRUTHFUL JAMES,
I am not up to small deceit, or any sinful games,
And I'll tell in simple language, as I've often told before,
About Lieutenant BUSTER and the Second Auditor.

But first, I would remark that it's not a proper plan
For the Auditor to set his clerks to going for a man,
And if a fellow's trying hard to do the best he knows,
He shouldn't snap a fellow up, at least so I suppose.

Now BUSTER he was Commissary at this here foreign post—
He was Adjutant and A. Q. M., and also used to boast
That "he always drilled his company," which made it mighty hard
For him to look at everything the days he went on guard.

He only had one detailed man to do official writing,
And the questions he was called to solve were often quite exciting.
He was asked to write "A history of the Indians there existing,"
And to give his observations on the "facilities for subsisting."

He had to fill inspection blanks, make sanitary rules,
And give active supervision to the lyceums and schools;
He also had to make report should any man desert,
And the causes for this breach of faith in full he must assert.

Now BUSTER was an active man, of this there's no disputing,
So they added to his other jobs the duty of recruiting.
He only once gave vent to oaths, and this was at a hop,
When he said that "since he'd run the band he'd like to shut up shop."

Now nothing could be finer or more beautiful to see
Than the first month's correspondence of this energetic bee,
Till the Sergeant brought attention to a shortage he had found
In the quantity of issue soap, of which he'd lost a pound.

Then BUSTER smiled a bitter smile, and said the "only way to do,
Was to put his fingers in his pants and put up what was due."
But the Sergeant of "experience" had another way to end it,
And suggested to the "Lootinant" that he had best "expind" it.

So the papers went to Washington for due examination,
And soon a letter did arrive requiring explanation,
Which required "the necessity, the reason and the right"
For the unusual expenditure of which they had caught sight.

Now it's not considered proper, for a military gent,
To say an Auditor's an ass—to any great extent;
But when he's called on for remark, must make out a defense,
Just as if he thought the question was not destitute of sense.

So BUSTER wrote a letter, in which he expressed with pain,
That it mortified him deeply to be called on to explain—
That he attended to his duties and he had no time for capers,
And expended that one pound of soap "so as to clean his papers."

BOOK NOTICES AND EXCHANGES.

THE CAMPAIGN OF WATERLOO. A Military History, by John Codman Ropes, Member of the Massachussetts Historical Society, Honorary Member of the U. S. Cavalry Association, &c., &c. New York. Charles Scribner's Sons. Pages, 401. Price, $5.00.

To know that a work has at last appeared upon the "Campaign and Battle of Waterloo," calm and reasonable in tone, devoid of rancor, accepting the weight of duly sifted evidence as conclusive, and plainly written in a spirit of justice, is as gratifying as it may seem incredible. The *raison d'être* of the present work is thus given in its preface: "Many of the narratives were written and published before all the facts had become known, hence were necessarily more or less imperfect. With a few exceptions, too, the histories of this campaign have been gravely affected by the partisanship of their authors. It is well-nigh impossible for Thiers and La Tour d'Auvergne to admit any fault, for Charras and Quinet to admit any merit, in Napoleon's management of affairs. It is equally difficult for the majority of English writers to avoid taking sides against the Emperor in any of the numerous disputes to which the campaign of Waterloo has given rise. * * We are now in possession, taking all our information together, of nearly all, if not quite all, the facts. It only remains to collect and coördinate them in a spirit of impartiality. This is the task attempted in the present volume."

No gift of prophecy was needed to foretell that such a book must necessarily be the work of a disinterested party. Mr. Ropes begins at the beginning and goes through to the end, examining each disputed point (and their name is legion) in the light of all the evidence: he sets before us the conflicting statements of the interested parties, and also the widely varying conclusions that French, German and English commentators have been able to draw from precisely the same facts.

It must not be supposed that the author abstains from criticism. On the contrary, criticism and deduction are his leading features; but so just, so reasonable and so well supported by facts do these appear to be, that they can scarcely fail to convince. And even in those cases in which there is ground for an honest difference of

opinion, the author will certainly command respect because of his evident intention to be fair and just.

There could be no ground for complaint if the warped judgment, that was capable of estimating equal numbers as "inferior in the ratio of four to seven," were balanced against the adulation that would have the enemy "assembled in as great numbers as possible, in order to crush them all at once." And some slight notice might well have been accorded those lovers of the truth who perceived in Napoleon's writings at Saint Helena, "deliberate attempts to falsify history," but who found no trouble in ignoring or excusing, under the provisions of the "baby act," the grave departures from established facts contained in Wellington's so-called "Memorandum on the Battle of Waterloo."

And now, that the charge against Napoleon of falsehood is completely and absolutely disproved by the production of the "Bertrand order," which Marshal Grouchy had concealed, those excellent men, some of whom are still living, continue to press the refuted charge even while quoting a portion of that order, whose existence disproves it. Verily, prejudices die hard; or, rather, they die not at all.

If anything is deserving of scathing condemnation, what can be more so than incorrect (speaking mildly) criticism, persisted in even after the critic is placed in possession of the proof of his errors? It would be difficult to imagine anything more exasperating; and, in order to show the author's moderation and impartiality, we quote his remarks in relation to this matter:

"But it is a curious thing, that, even with those historians who wrote after the Bertrand letter came to light, the influence of Grouchy's misrepresentations has induced a sort of ignoring of the letter, and an acquiescence in the erroneous judgment of Napoleon's conduct, formed when the existence of the letter was unknown, and when the verbal instructions, as given by Grouchy, were all the orders which it was believed that Napoleon ever gave to Grouchy. Thus Chesney, etc., * * *"

Of the criticism in the same strain by Colonel Maurice, the author says: "We confess our inability to explain or account for criticism of this nature, unless by the hypothesis that to a mind preoccupied with a certain view, firmly held, it is often possible that the plainest evidence should be, so to speak, invisible. * * *"

General Hamley's comments upon the responsibilities of Ney and Grouchy in this campaign, which have rarely found acceptance beyond the walls of the English Staff College, the author notices as follows: "Hamley does not seem even to have heard of the Bertrand order. Hence his elaborate criticism on Grouchy's conduct—leaving out, as it does, the two most important data * * is entirely beside the mark, and cannot be considered as possessing any practical value whatever. He has addressed himself to a case which never really existed."

Mr. Ropes is merely seeking the truth. He knows that his facili-

ties are superior to those of his predecessors, and that over them he has the great advantage of freedom from prejudice, as well as that of freedom from any suspicion of the necessity to please some one or to take the consequences. No American need be told that his qualifications for the task are of the first order. The work itself, however, is the only evidence necessary. The style and finish of the book, and of the excellent atlas which accompanies it, are such as the importance of the subject would lead one to desire. The atlas is unusually good. There are fourteen plates on such a scale as to show everything clearly. The positions of the troops on the theater of operations are shown at twelve critical periods of the campaign: and their positions on the field of Waterloo at the beginning and close of the battle.

It seems well within bounds to say that the book before us is clearly the leading work on the subject of which it treats.

W. A. S.

CÆSAR: A HISTORY OF THE ART OF WAR AMONG THE ROMANS DOWN TO THE END OF THE ROMAN EMPIRE, WITH A DETAILED ACCOUNT OF THE CAMPAIGNS OF CAIUS JULIUS CÆSAR. Great Captains Series. By Colonel Theodore Ayrault Dodge, U. S. Army, Retired List, author of "Alexander," "Hannibal," etc. Pages, 789. Published by Houghton, Mifflin & Co. Price, $5.00.

In this book the noted author who, in his other works, has added greatly to our interest in and military knowledge of the ancients, gives the final one of the volumes of this highly interesting series. As stated in his preface, it pretends to be only a military history of Cæsar. For his personal history and statesmanship the reader is referred to other works. In this case Colonel Dodge has done something that probably no other author of works on Cæsar, except Colonel Stoffel, has ever done, actually visited all the places of note mentioned in the book, and therefore the errors in topography that have existed in many other works are absent from the sketches and maps with which this book is so abundantly supplied. By a careful perusal of the work, one can form a very accurate estimate of the weakness as well as the wonderful military capacity of Cæsar, and by comparing him with Alexander and Hannibal can, in some degree, arrive at conclusions in his own mind as to the relative merits of these, the greatest military chieftains of ancient times.

The various formations of the Roman Legion, when used against barbarians, and the changes made when employed against their own people, the armament and military engines, are all described in the clearest manner, with the aid of sketches and illustrations. Of great importance as a study in the matters of the pay and supply of armies are the very clear statements regarding the pay proper, clothing, equipment and allowances of the Roman soldiery.

The author describes in vivid language the personal qualities of Cæsar as a friend, as an enemy, as a conqueror, and as a victim of defeat, so that we are enabled to form a very clear idea of this, the

greatest of all Roman leaders. The series "Alexander," "Hannibal" and "Cæsar," will be a valuable addition to any military man's library, and will also supply a fund of interesting reading for the general public.

T. C.

INFANTRY FIRE—ITS USE IN BATTLE. By First Lieutenant Joseph B. Batchelor, jr., Twenty-fourth Infantry.

This is a handy little volume of 250 pages, with numerous plates, bound in leather, and uniform in size with the Drill Regulations of the service. The author prefaces the work with the statement that "the merit of the book lies in the importance of the subject." Of this fact there can be no longer any doubt as regards its importance, not only to the commissioned officer, but to the non-commissioned officer as well. The book was prepared at the U. S. Infantry and Cavalry School, under instructions from the War Department, and is now, in connection with "Infantry Fire Tactics," by Captain Mayne, of the British army, the authorized text-book for army officers in their preparation for examination for promotion. The language of the book is clear and concise, and the subject is treated under the following sub-heads: "The Trajectory," "Variations of Trajectory," "Mean and Practical Trajectory," "Limit of Individual Fire," "Controlled Fire and Combined Sights," "Effects of Collective Fire," "Influence of Ground," "Long Range Fire," "Direction and Control of Fire," "Kinds of Fire," "The Fire Unit," "Supply of Ammunition," "Rapidity of Fire," "Tactical Deductions," "Range Finders," "Intrenching Tools." Great credit is due this young officer for the production of a work so concisely written that the material information embraced in the subject of "Fire Discipline" can be obtained without wading through about everything else that has been written on the subject.

The book can be obtained through Geo. A. Spooner, Leavenworth, Kansas, or the Secretary of the U. S. Infantry and Cavalry School. Price, $2.00.

W. S.

THE ONE HUNDRED AND FIFTIETH ANNIVERSARY OF THE FOUNDATION OF THE FIRST CORPS CADETS, MASSACHUSETTS VOLUNTEER MILITIA, OCTOBER 19, 1891.

The anniversary described in the foregoing pamphlet was celebrated by the laying of the corner-stone of a new armory, designed to be the permanent home of the famous Cadet Corps of Massachusetts. Addresses were made by many eminent men. From that delivered by Mr. John C. Ropes, we take the following extract, as embodying ideas well worthy of the thoughtful consideration of our young army officers: "Now, the principal object of the Military Historical Society is to study the process by which our people became able to meet the many emergencies presented by the War. The study is a most interesting one. Our War was a hard fight from beginning to end. We were met by men just as able, brave and resolute as ourselves, commanded at the outset by generals who were superior

to the first commanders of our armies. That we were able to meet and overcome this force, demonstrated what the United States is capable of doing. And, apart from the interest attaching to this great crisis in our history, it may be remarked that the lessons of military history can be better learned from the experience of our own people than from the experience of foreigners. You get more knowledge of what is likely to happen ten years hence by the study of the War of 1861 than you would if you studied the campaigns which Wellington conducted in the Peninsula."

HAND-BOOK OF MILITARY SIGNALING. By Captain Albert Gallup, Signal Officer, First Brigade, N. G., New York, New York. D. Appleton & Co. Pages, 73.

Captain Gallup, who died while his book was in press, has left behind him in this little, unpretentious work, a monument which will be more effective in preserving the memory of his services to the National Guard than any stone that may be erected above his grave.

Although compiled for the use of the National Guard, it might be adopted for use in the regular army, on account of its superiority in regard to convenience of handling, clearness, conciseness and completeness of definitions and explanations, to anything which has yet been supplied by the War Department.

It contains within a small compass all that it is necessary for the officer or soldier of the line to know in regard to the use of flag, torch, heliograph, field or permanent telegraph, and the making of such reconnaissances as would be entrusted to the average acting signal officer.

The numerous plates are beautifully executed, and answer their purpose perfectly.

The work is uniform in size with the Drill Regulations, as all text books intended for the use of officers and men of the line should be.

CYCLE-INFANTRY DRILL REGULATIONS, by Brigadier-General Albert Ordway, and the CYCLIST'S DRILL REGULATIONS, U. S. ARMY, by Lieutenant William T. May, M. A., Commanding Military Bicyle Detachment, Fort Sheridan, Ill.

The following remarks by Albert A. Pope, of Boston, to whom the country is greatly indebted for the energetic campaign now being carried on in favor of improving the highways in the United States, will explain the objects and uses of the above works:

"The former are similar to those used in cavalry service, while the latter are based on the infantry drill. I believe these books are the first of their kind published in the United States, and so far as I can ascertain, the only complete military cycle drill regulations published anywhere in the world; and in search of drill books of this nature I sent to England and Continental Europe. It is true that there have been two small pamphlets or leaflets printed in England, but these are considered practically valueless. To the army, militia, and thousands of cyclists, these books are alike valuable and instructive, but they are not only of value to these classes of the community, but the entire public is concerned to a greater or less extent in the work that cyclists everywhere are engaged in—that of promoting the improvement of highways. In the Cycle-Infantry Drill Regulations is printed in full a speech of Major-General Nelson A. Miles, in which the necessity of good roads is emphasized."

COMBAT TACTICS OF CAVALRY. By Lieutenant-General Brialmont, being the second part of his work entitled "Combat Tactics of the Three Arms," translated from the French, by Major Camillo C. C. Carr, Eighth Cavalry, U. S. Army, In Charge of the Department of Cavalry, U. S. Infantry and Cavalry School, Fort Leavenworth, Kan.

A résumé of the Combat Tactics employed in the cavalry of the different European nations, made by Lieutenant-General Brialmont, of the Belgian army, whose great reputation as an engineer officer is a sufficient guarantee of the accuracy with which the work has been done, and the soundness and fairness of the comments made upon the various tactical formations employed.

One of the principal merits of the work is that it obviates the necessity of every one interested in the subject expending the time and labor which would be required to collate for himself from different writers, if such a thing were possible, the information furnished in this pamphlet of eighty pages. Two folding plates show the different formations employed by the various units, from the squadron to the division.

Printed at the School and to be had on application to the Secretary.

REMINISCENCES AND RECORD OF THE SIXTH NEW YORK VOLUNTEER CAVALRY. By Alonzo Foster, late Sergeant Company "F." Pages, 148.

This is one of many books, made up of the personal reminiscences of the enlisted men of our gallant volunteer cavalry regiments, which have been written by the survivors of our great war, for the preservation of the memory of the brilliant deeds in which they performed so conspicuous a part. Volumes of this nature throw side lights on historical events in a way to enlighten, as nothing else can, the minds of those who may take it upon themselves to write enduring historical treatises on the action of the different commands of which the enormous volunteer army was composed from 1861 to 1865.

The Sixth New York Volunteer Cavalry was a famous regiment, and its gallantry and efficiency are well remembered by all the survivors of that unequaled mounted force known as the Cavalry Corps, Army of the Potomac.

INSTRUCTION FOR THE INFANTRY SOLDIER RELATIVE TO HIS SERVICE IN BATTLE (from the Norwegian), and PRACTICAL APPLICATION OF TACTICS AS APPLIED IN THE RUSSIAN ARMY TO SMALL CALIBER RIFLES AND THE EMPLOYMENT OF SMOKELESS POWDER. (from the French), translated by First Sergeant Fredrik Knudsen, Company "F," Thirteenth Infantry.

In this little pamphlet of twelve pages, Sergeant Knudsen has made known, for our infantry officers and men, the latest instructions in force in the Russian and Norwegian armies for the government of infantry in the use of rifle-fire on the battle-field.

The subject matter is interesting and important, and the clearness of the English in which the translation is expressed is creditable to the translator.

Printed at the U. S. Infantry and Cavalry School, Fort Leavenworth, Kan., and to be had on application to the Secretary.

MILITAER WOCHENBLATT. 1893. Nos. 1 to 18.

The Battles Around Le Bourget. The Simplification of Field Guns and Firing at Short Ranges. The Fifth Cavalry Division, August 15, 1870. Infantry Pioneer Service in Peace. An American Opinion of the Long Distance Ride Between Berlin and Vienna. The Cure of Dipsomania in the United States. Our Infantry. Smokeless Powder in Austro-Hungary. The Military Society of Berlin. Views in Regard to the Infantry Assault. Tactical Practice and Practical Theory. General Brialmont and the Turkish Fortifications. The Effect of the New Military Law on the Quality of Our Infantry. The Organization of the English Army. The Pursuit From Jena to Prenzlau (with maps). Practical and Theoretical Tactics. The New Ships of the U. S. Navy. War Theory and Practice. Recruit Training. Changes in the Organization of the School of St. Cyr. Historical Sketch of the Russian Military Schools. Condition and Strength of the Austro-Hungarian Army. The Present Organization of the French Infantry: Their Strength and Distribution. The Preparation of Food in War. Cooking Schools in the English Army. A New Telemeter. Remounts in France. The Effective Military Strength of the European States.

REVUE DU CERCLE MILITAIRE.

No. 48: An English Officer's Letters on Our Maneuvers. Medical Statistics of the French Army for 1890. The Rousseau Battery and Accumulator. No. 49: The Prismatic Telemeter of Souchier. Pacification Measures in Tonquin. Medical Statistics of the French Army for 1890. No. 50: The Prismatic Telemeter of Souchier—with illustrations (concluded). Transmission of Electricity Through Space Without Using a Conductor. No. 51: The Chalais-Meudon Dirigible Balloon. An English Officer's Letters on Our Maneuvers. 1893—No. 3: War a Hundred Years From Now. Infantry Combat Tactics. No. 5: Field Hospitals. An English Officer's Letters on the Combat Tactics of the French Infantry in 1892. No. 7: Field Hospitals. The Berlin Military Society. The Territorial Cavalry and the Remount Supply of Italy. No. 8: Field Hospitals (with map). The Berlin Military Society. The New Dutch Rifle. No. 9: The War Game and Means of Improving It. An English Officer's Letters on the Combat Tactics of the French Infantry in 1892. The Adoption of the Loose Tunic for Officers of Engineers. No. 10: The War Game, and Means of Improving It. The Grand Maneuvers of the German Army in 1893.

JOURNAL OF THE UNITED SERVICE INSTITUTION OF INDIA.

September, 1892: Plevna, with Tactical Considerations of the Defense, by Captain F. G. Bond, R.E. Revolver Training, by Captain F. Campbell, D. A. A. G. for Musketry. Jungle Fighting, by Captain H. V. Cox, D. A. A. G. for Musketry. The Training of Cavalry Leaders, and Remarks Upon Pace in Maneuver and Upon Succor Squadrons in Battle, by Major R. H. Morrison, Eighteenth Hussars. The Volunteer Force in India, by Captain E. H. F. Finch, Adjutant N. W. R. Volunteers. The Combined Tactics of Infantry and Artillery, by Major E. N. Henriques, R. A. October, 1892: The Training of Cavalry for Reconnaissance, by Captain H. L. Pilkington, Twenty-first Hussars. Warfare in Mountainous Countries, by Lieutenant-Colonel E. Paquie, One Hundred and Fortieth Regiment of France, contributed by Major H. C. D. Simpson, R. A. December, 1892: Burma, 1885–87. January, 1893: A Few Remarks on the Armament of Our Cavalry. Field Artillery and Infantry, and Their Effects in War, by Lieutenant-General H. R. Browne.

THE JOURNAL OF THE ROYAL UNITED SERVICE INSTITUTION. 1893.

January: Notes on Infantry Tactics, by Lieutenant-General Sir W. J. Williams. An Old Log, by Francis H. Miller, Esq. The Army and Navy of Japan, by Pierre Lehautcourt, translated by Major G. F. R. Henderson, York and Lancaster Regiment, Staff College. The Cavalry Division and Divisional Cavalry, by a General of Cavalry. An Improved Shelter Tent (with illustrations), by Major Malett, Northumberland Fusiliers. February: Foreign War Offices, by Captain C. E. Callwell, R.A. Return from Afghanistan to India of General Stewart's Army in 1880, by Lieutenant-Colonel W. J. Boyes. The Turkish Janissaries, by General F. H. Tyrrell, Madras Army. Moltke's Tactical Exercises, 1858–82, by Captain Maude, late R.E. Field Firing Operations of a Mixed Force in Switzerland, in Connection with the Defense of St. Gothard, translated by Captain E. Agar, R.E.

JOURNAL OF THE UNITED STATES ARTILLERY. January, 1893.

Our Artillery Organization, by Colonel John Hamilton, U. S. A. Artillery of Siege Warfare, by Lieutenant L. G. Berry, Fourth Artillery. A Few Thoughts on Practical Artillery, by Lieutenant G. N. Whistler, Fifth Artillery. Target Practice, by Lieutenant H. L.

Doris, Third Artillery. A New Percussion Fuse, by Henry P. Merriam. Field Artillery Draft, by Lieutenant A. D. Schenk, Second Artillery. Some Applications of Glennon's Velocity and Pressure Formulas, by Captain James Ingalls, First Artillery. Electricity and the Art of War, by Lieutenant C. D. Parkhurst, Fourth Artillery. The Artillery Fire Game (Rohne), translated by Lieutenant John P. Wisser, First Artillery.

THE ARMY MAGAZINE. Chicago, Ill. March 18, 1893. An illustrated monthly. $3.00 per year.

The Rising Menace Against the Peace of American Society, by Colonel William S. Brackett, Inspector-General. Illinois National Guard. The Nation's Military; Is It Needed at the Close of the Nineteenth Century? by Joseph B. Doe, Brigadier-General, and Adjutant-General, Wisconsin. A Ride for Stonewall, by Henry Kyd Douglas, Major-General and Adjutant-General, Maryland. The Bloody Charge at Vicksburg, by James A. Sexton, Postmaster at Chicago. Two Army Girls, by D. T. H. Detroit, the City of the Straits (twenty-two illustrations).

THE PENNSYLVANIA MAGAZINE OF HISTORY AND BIOGRAPHY. Vol. XVI., No. 4. January, 1893.

Addresses and Proceedings of the Historical Society of Pennsylvania, on the Death of Brinton Coxe, Esq. (portrait). Extracts from the Diary of Captain John Nice, of the Pennsylvania Line, by Miss Henrietta Cooper. Roster of the Officers of the "Legion of the United States," Commanded by Major-General Anthony Wayne. Incidents in the History of York, Pa., 1778. The Boudinot Correspondence. Records of Christ Church, Philadelphia: Baptisms 1709–60, by Charles R. Hildeburn. Notes and Queries.

PROCEEDINGS OF THE ROYAL ARTILLERY INSTITUTION.

December, 1892: The Sudan: Past and Present, by Major F. R. Wingate, R. A. Fire Discipline and Skill-at-Arms, by Major P. F. Hamilton, R. A. Achievements of Field Artillery, by E. S. May, R. A. (Part V). January, 1893: Soldiering and Sport in Mashonaland, by Lieutenant T. Jones, R. H. A. Saddlery, by Lieutenant-Colonel J. F. Brough, R. H. A. Achievements of Field Artillery, by Major E. S. May, R. A., (Part VII.—conclusion). Defense of a Horse Artillery Battery Against Cavalry, translated from the Invalid Russe, by Major E. Lambert, R. A.

OUTING. 1893.

January: Lenz's World Tour Awheel. The Militia and National Guard of Ohio, by Lieutenant W. H. C. Bowen, U.S.A. February: Ski Running, by W. S. Harwood. Roping Elk in the Rockies, by Hiram S. Blanchard. The Militia and National Guard of Ohio, by Lieutenant W. H. C. Bowen, U.S.A. March: Chases and Chasing

in Ireland (illustrated), by T. S. Blackwell. The Militia and National Guard of Ohio (concluded), by Lieutenant W. H. C. Bowen, U.S.A.

JOURNAL OF THE MILITARY SERVICE INSTITUTION. March, 1893.

Prize Essay. The Army Organization Best Adapted to a Republican Form of Government, by Lieutenant Stuart, Ordnance Department, U.S.A. The Evolution of Modern Drill Books, by Captain Maude. Telegraph in War, by Lieutenant Swift. Artillery Science in the Rebellion, by General Tidball. Comment and Criticism. Reprints and Translations. Military Notes. History of the Third Regiment of Artillery, by Lieutenant Berkheimer.

THE UNITED SERVICE. Hamersly & Co. 1893.

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THE MILITARY GEOGRAPHY OF MEXICO.

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MILITARY geography may be said to embrace the collection and arrangement for convenient reference, of such information as would be desired by a government, or by a commanding general, about to enter upon an offensive campaign against the country under consideration. This information is mostly statistical, partly geographical, and, to some extent, speculative. The statistical information desired refers particularly to the warlike resources of the country in question, such as the number and condition of the population, the wealth of the country, its productions, communications, the strength of its army and navy, etc. The geographical information sought, except in regard to frontiers and coasts, refers almost exclusively to physical geography, and embraces such points as the climate of the country, its rivers, lakes, mountains, etc.

The speculative matters relate to strategical questions arising out of the configuration of frontier lines; the location of the obstacles, communications and fortifications of the country; the strength of the enemy's available forces; the lines on which they would probably operate; the routes by which they could most easily be attacked with the prospect of a decisive result, etc.

To treat our subject exhaustively would require far more space than can be assigned to this paper; consequently, none but the most salient points are noticed, and each of them very briefly.

EXTENT.

Mexico extends from the United States to Central America, and from the Gulf of Mexico and Caribbean Sea to the Pacific Ocean. In extreme limits it embraces about thirty degrees of longitude and eighteen degrees of latitude. Its superficial area is about 744,000 square miles, equal to about two and three-fourths times that of the State of Texas, or three and one-half times that of the German Empire.

The Republic comprises twenty-seven States, the Federal District and the Territory of Lower California. In the following table, for convenience of future reference, these are arranged in three groups, as follows: The *northern group* comprises the States of Sonora, Chihuahua, Coahuila, Nuevo Leon, Tamaulipas, Sinaloa, Durango, and the territory of Lower California; the *southeastern group* comprises Yucatan, Campeche, Tabasco and Chiapas; the *central group* comprises all the remaining States and the Federal District. The following table will be referred to later:

	Area sq. miles.	*Population.*
Northern group	401,787	1,222,357
Southeastern group	88,298	706,841
Central group	252,863	8,077,684
Total	743,948	10,006,882

BOUNDARIES.

The length of the northern frontier line of Mexico is about 1,900 miles, of which 1,000 miles is formed by the Rio Grande River; that of the eastern coast line is about 1,500 miles. The Pacific coast line, including that of the Gulf of California, is about 4,500 miles in length; the southern boundary about 500 miles.

Mexico's greatest length is about 2,000 miles; her greatest breadth is 750 miles. At the Isthmus of Tehuantepec her width is only 140 miles.

TOPOGRAPHY.

The Cordilleras extend from Central America through Mexico, following, in a general way, both its eastern and western coasts. Between these mountain chains lies the great central table-land, called the Plateau of Anahuac. This plateau embraces nearly three-fifths of the entire area of Mexico. The highest portion of the plateau is in the neighborhood of the City of Mexico, and may be said to culminate in four volcanic peaks, as follows:

Name.	*Height in feet.*
Popocatepetl	17,720
Iztaccihuatl	17,200
Orizaba	17,176
Nevada de Toluca	15,271

From this locality, where the general elevation is more than 7,000 feet above sea level, the plateau has a general inclination toward the north, gradually subsiding until, at El Paso, distant 1,100 miles, the elevation is only 3,800 feet. Low mountain ranges divide the great plateau into smaller ones, as follows:

Name of Plateau.	*Mean Elevation.*
Tenochtitlan	7,500
Puebla	7,000
Durango	6,550
Chihuahua	4,600
Oaxaca	4,500

There is *no point* of the great plateau *from which mountains* may not be seen in clear weather. They are all the same in appearance—abrupt, bleak, and without vegetation. By avoiding the mountains, the general surface will be found to be sufficiently even; and, according to HUMBOLDT, "there is a good natural carriage-road from the City of Mexico to Santa Fé, N. M., a distance of 1,400 miles, with only slight variations from the level." This is practically the line of the Mexican Central Railroad.

No great valley traverses this plateau, nor are there many small ones. The mountains forming the western and southwestern border of the plateau slope abruptly toward the Pacific and the Gulf of California. Those on its eastern edge are equally abrupt at its southern extremity, but gradually subside as we follow the chain northward, and finally merge in the great plains along the Rio Grande. The great plateau can be most easily reached from the Gulf by the Passes of Orizaba and Jalapa, both of which may be entered by roads from Vera Cruz. It may also be reached by the Pass of Saltillo, about 500 miles from that of Jalapa. Mexico has been repeatedly invaded by the Jalapa Pass. In 1846, General TAYLOR penetrated by that of Saltillo; in 1862, the French penetrated by the Orizaba Pass.

Stated somewhat in detail, the routes of the most noted invasions have been as follows: CORTEZ used the route Vera Cruz, Jalapa, Tlascala, Otumba, Mexico; SCOTT followed the line Vera Cruz, Jalapa, Perote, Huamantla, Puebla, Rio Frio, Mexico; the French line was Vera Cruz, Soledad, Cordova, Orizaba, Esperanza, Puebla, Rio Frio, Mexico. There is now a railroad through each of the main passes from the coast to the capital, and one from Tampico to San Luis Potosi.

Between the foot of each of the great mountain chains, bounding the plateau, and the sea lies a strip of low, flat country called the Tierras Calientes, or Hot Lands. Along the western coast, they form a strip from thirty to seventy miles in width. They are more extensive along the eastern coast, where they include the greater part of the States of Tamaulipas, Vera Cruz, Tabasco and Yucatan.

The eastern coast of Mexico is low, flat and sandy, and is not indented by arms of the sea of commercial or military importance. But along this shore may be found many shallow sounds or inlets, almost entirely separated from the sea by low sandbars. There is not one good harbor on this coast. Those of Vera Cruz, Tampico and Tuxpan, which have the greatest strategical importance, are merely open roadsteads; they afford little or no protection from northers, which blow along this coast with great violence. Under such circumstances, vessels lying at anchor in those harbors are liable to be wrecked, and are often compelled to put to sea to avoid it. It appears that the best anchorage is at Anton Lizardo, near Vera Cruz, where the fleet conveying General SCOTT's army assembled before disembarking the troops to attack that city. Other harbors on the Gulf coast are those of Tabasco, Campeachy, Progreso, Sisal, etc.

On the Pacific coast good harbors are more numerous, that of Acapulco being one of the finest in the world, and those of Manzanillo, Mazatlan, San Blas, Guaymas and others being excellent. All these, and several others, are superior to the best on the eastern coast.

RIVERS.

The rivers of Mexico are, as a rule, small and unimportant. Some of them are several hundred miles in length, but few of them are navigable because of insufficient water, rapids, or for other reasons. The principal streams will be found in the following table:

Name.	*Length.*	*Distance Navigable.*
Rio de Santiago	540 miles.	
Rio de las Balzas	420 "	
Rio Yaqui	340 "	
Rio Conchos	340 "	
Rio Grijalva	340 "	
Rio Usumasinta	340 "	
Rio Panuco	290 "	150 miles.
Rio Sinaloa	280 "	
Rio de Ures	210 "	
Rio de Culiacan	160 "	
Rio de Goatzocoalcos	112 "	25 miles.
Rio Tamesi		50 "
Rio Tuxpau		30 "

* For light vessels only.

Thus we see that there is very little river navigation in Mexico. Owing to the physical formation of the country, there are no great river systems, nor is navigation possible excepting for a few miles from the sea, on account of the reasons above mentioned. The Mexican streams are most useful for purposes of irrigation.

LAKES.

The lakes of Mexico are rather numerous, especially in the north-central region of the great plateau. Most of them are extensive shallow lagoons, the remains of what were once large basins of water. Like the rivers, they are all small and of little value for the purposes of commerce or communication. The most considerable one is Lake Chapalla, in the State of Jalisco, which is about seventy miles in length and from ten to twenty in width. The Rio de Santiago flows through this lake from east to west. Many so-called lakes along the Gulf coast, such as the Laguna Madre, Laguna de Terminos, etc., are really arms from the sea.

Upon the whole, Mexico is poorly supplied with water, and, upon the great plateau, the supply has been steadily decreasing since the Spanish Conquest.

CLIMATE.

The four seasons are more or less distinctly marked in the northern portion of Mexico, but in central and southern Mexico there are only two seasons, viz: Summer, or the Rainy Season, which lasts from May to October, and Winter, or the Dry Season, which comprises the remainder of the year.

With reference to temperature, Mexico is divided into three zones, whose general direction is from north to south:

1. *The Tierras Calientes*, or Hot Lands, including the region along each coast lying between the sea and an elevation of 2,500 feet. Here the usual temperature ranges from 70° to 85°. But near the sea level, consequently at all seaports, the summer temperature frequently rises higher than 100°; and this is often accompanied by yellow fever. During the winter months the average temperature is only a few degrees lower than in the summer—excepting when northers blow, when the temperature usually falls from 20° to 40° in a few hours.

2. *The Tierras Templadas*, or Temperate Lands, lying between 2,500 and 5,000 feet above sea-level. In this region the ordinary daily temperature ranges in the immediate vicinity of 65° or 70° throughout the year; and it is said that there is no more healthful or pleasant climate than this. The climate of the Tierra Caliente on

the contrary is one of the worst and most unhealthful on the face of the earth.

Each of these regions comprises about one-eighth of the total area of Mexico. Generally speaking, they may be said to form zones parallel to the nearest coast. But, in some cases, they penetrate far within the central mountain system along the valleys of streams. This occurs in Puebla, Oaxaca, Michoacan, Jalisco and in other states.

3. *The Tierras Frias*, or Cold Regions, include portions of the surface more than 5,000 feet above sea-level. This division embraces three-fourths of the area of Mexico. Here, the average yearly temperature ranges from 55° to 62°; and the extremes of 45° and 80° are seldom exceeded below 8,000 feet altitude. The climate is cold as compared with that of the coast country; but not as compared with that of any part of the United States, excepting portions of Florida and the Gulf Coast. The Tierras Frias are sufficiently salubrious up to an elevation of about 8,000 feet. Above this altitude the climate is very disagreeable, principally on account of the heavy winds which raise great clouds of dust on the plains; and also because of the want of moisture in the atmosphere, which has very unpleasant effects and causes much suffering to those not acclimated. During the rainy season, which, in these elevated regions, lasts from June to September, the air is pleasant, but many of the roads become impassable quagmires. During the dry season, marching is equally uncomfortable on account of the dust which is said to speedily reach a depth of several inches and to fill the air. The nights, at such elevations are invariably very cold. And, during almost the whole year, the sky of Central and Northern Mexico is said to be clear, except near the summits of the highest mountains.

We see, therefore, that Mexico has every variety of climate from tropical heat to arctic cold; and can probably produce every plant known to man. But it should be noted that the climate of any particular place depends far more on its elevation than on its latitude.

FOOD PRODUCTS.

In the Tierras Calientes the entire surface, excepting certain small areas of sand, is covered with a very luxuriant vegetation. Oranges, bananas, rice, hemp and all kinds of tropical plants are found in abundance. In the Tierras Templadas, coffee, sugar, tobacco, cotton and other plants are cultivated. In the Tierras Frias, wheat, corn, barley and other products of temperate latitudes are found; the maguey is, however, the principal object of cultivation. Wheat is cultivated with some success in portions of all but five of the Mexican states. Corn, frijoles, or brown beans, and Chili Colorado, however, constitute the subsistence of nine-tenths of the population, and are extensively produced in every state.

On the plateau, north of the 20th parallel, crops depend upon irrigation. South of this, the rain-fall is often sufficient, but cannot always be depended upon. More than half the Mexican farming lands depend upon irrigation; and it is a singular fact that the condition of the country in this respect was far more flourishing under the Aztecs than it has ever been since.

Two crops of either wheat or corn are grown on the same ground every year in various parts of Mexico, and in the States of Vera Cruz and Tabasco on the Gulf coast, Mexico on the plateau, and in Jalisco, Oaxaca and Guerrero on the Pacific coast, three crops of corn are cultivated on the same ground in a single year. The yield per acre per annum is considerably greater than in the United States. All this is done with the implements of the Aztecs, which, it may be added, were also those of the ancient Egyptians. American machinery has been introduced, but, as yet, meets with very little favor.

Mexico, notwithstanding her small area under cultivation and her primitive methods, produces annually one-ninth as much corn as the United States, but only one-fortieth as much wheat. All authorities seem to think that the annual production will soon be much greater than at present.

A few items are here given to afford an idea of the annual Mexican food production:

Article.	*Quantity per Annum.*
Corn	200,000,000 bushels.
Wheat	12,000,000 "
Barley	10,000,000 "
Potatoes	4,000,000 "
Frijoles	508,000,000 pounds.
Sugar	154,000,000 "
Rice	33,000,000 "
Coffee	17,500,000 "

Upon the whole, Mexican agriculture is said to be in a very backward condition. A large part of its surface can never be brought under cultivation. A large portion of the area under cultivation gives very indifferent results, but the remainder is equal in fertility to any country in the world. In other words, it may be said that Mexico is composed of regions of great fertility, separated by mountain ranges or by tracts of very unproductive country, which, in many cases, are simply deserts. Without attempting to point out these more productive localities, it may be sufficient to observe that all the great cities of the interior are located in such

regions, excepting, however, Zacatecas and several smaller towns, which owe their existence to mines in their vicinity. The portions of the country not suitable for agricultural purposes are, in general, more or less suitable for grazing, and support thousands of ponies, cattle, sheep, goats and other animals.

DISTRIBUTION OF THE POPULATION.

It does not appear that any complete or exact census of the Mexican population has ever been taken. According to the most reliable estimates, it numbers more than ten millions. More than half the whole number are Indians; the Whites number more than one million; the Mestizoes are still more numerous; the Negroes number from ten to fifteen thousand; the remainder of the population is composed of various mixtures of the races above named.

Referring to the table on page 118, we see that the northern group of States, containing more than one-half the area of Mexico, contains less than one-ninth of the population, or about three persons to each square mile. It should also be noted that the central group, containing less than one-third of the total area, contains more than four-fifths of the population. This central region must be regarded as the "heart of the country," not only in geographical position, but also in population, wealth, productions, manufactures; in fact, in everything but the grazing and mining interests. And, in order that any operations against Mexico may be of a decisive character, they must include the conquest and occupation of this region, the only portion of that country which furnishes conditions favorable to the operations of large modern armies, viz: ample means of subsistence, good communications and a healthful climate.

CONDITION OF THE PEOPLE.

The great mass of the people are extremely poor and densely ignorant as well as improvident, the natural result of their treatment by the Spanish conquerors and the successors of the latter. Under their government, almost the entire population was absolutely without any education whatever; a state of things which suited their traditional policy, European as well as American, and which they took great pains to preserve. A far more enlightened policy has lately been pursued by the Government of the Republic and education, instead of ignorance, is now compulsory. Yet even now, notwithstanding all the efforts of the Government, it is said to be doubtful whether one-third of the people can even read and write. The Indian population has been very little affected by nearly four centuries of contact with the white race. They are to-day very similar to their Aztec forefathers in manners, customs, mode of life—in everything but religion. They follow the same pursuits and use exactly the same implements as the Aztecs. The latter, indeed, were better farmers; they made a larger area productive and supported a denser population.

MILITARY CHARACTER.

Persons familiar with Mexican history, remembering that Mexican armies have repeatedly been defeated by greatly inferior forces of Spaniards, Americans, and Frenchmen, will probably be inclined to regard the Mexican soldier as decidedly inferior to the soldier of almost any civilized country.

There is much justification in history for such an opinion. However, before accepting this conclusion as final, several points should be taken into consideration, among them the following:

1. In the encounters referred to, the Mexican forces were invariably poorly instructed, poorly armed and destitute of good officers in the lower grades; disadvantages that could not be equalized by the efforts of a few able men in high command. In future wars, this state of things will not obtain in their regular army, nor to so great an extent as formerly in any part of their forces.

2. Their want of good communications and the general poverty of the country have been such that their resources could not be made available upon a threatened line in any reasonable length of time. This condition has almost completely disappeared.

3. The Mexican (soldier) has been accustomed to handle and use small arms from childhood, and he often displays the same recklessness and individual prowess that we are familiar with among our native Indians. In physical bravery and contempt for danger, he will probably be found equal to any soldier he may be called upon to meet. Numerous instances show that these people, bravely and skillfully led, fight well; poorly led, they are easily stampeded—in other words, with such troops in combat, very much depends upon their officers.

4. The true point of inferiority of the Mexican soldier will be found to consist in his dense ignorance. But compulsory education is correcting this evil and will in time eradicate it. History is full of examples showing the great superiority of armies composed of intelligent and educated individuals. Such forces are said to possess *moral power;* and NAPOLEON himself regarded this as far superior to mere physical force. It is also held that recent improvements in fire-arms have still further increased the value of moral power.

5. The marching power of Mexican troops has been commented upon by many officers who have visited that country; and, if it has been correctly reported, it far exceeds that of all other armies. It is asserted that Mexican infantry, in small bodies of 2,000 or 3,000 men, has repeatedly marched about fifty miles a day for several consecutive days. While this can scarcely admit of belief, it can not be doubted that they are accustomed to march their troops with far greater rapidity than is customary in any other army.

MILITARY STRENGTH OF MEXICO.

The Mexican troops immediately available, in case of war, are as follows:

1. The regular army consisting of about 1,700 officers and about 30,000 men. This force comprises thirteen regiments of cavalry, twenty-nine battalions of infantry, four battalions of artillery, besides some engineers, all armed with improved weapons.

2. The Rural Guard, about 3,000 strong, said to be one of the finest bodies of light cavalry in existence.

3. The local troops of the several states numbering in all about 3,000 men. Total about 2,000 officers and 36,000 men.

This force, it is claimed, could be raised in a few weeks to about 3,700 officers, 132,000 infantry, 25,000 cavalry and about 8,000 artillery and 2,000 engineers, all more or less instructed. This would still leave a reserve of about 500,000 uninstructed and unorganized men.

Mexico maintains a military school at Chapultepec. It is modeled, to a considerable extent, after West Point, and graduates thirty or more cadets yearly.

No information is available from which the condition of the Mexican general staff can be learned. From various circumstances, it is suspected that it is not in a very high state of efficiency; among these is the fact that their troops are frequently compelled, even in time of peace, to provide their own subsistence. It is also notorious that wagon transportation is and always has been almost entirely undeveloped in that country; and that their railways constitute the only efficient means of transportation they have ever had, their next best reliance being pack-animals—a state of things that must hamper the most efficient staff in any army.

CITIES AND TOWNS.

Nearly the whole Mexican population lives in cities, towns or villages. Detached houses are rarely seen in any part of that country. Even in the most densely populated districts, travelers report

riding from town to town without observing a house. Except in the Tierras Calientes, the houses are usually built of stone or adobe, and are very strong for defense. Nothing smaller than a field-gun will have any effect on the average Mexican house, and it is almost impossible to set one afire.

Mexico City, the capital and metropolis, contains about 300,000 people, Leon 120,000, Guadalajara and Puebla 75,000 to 80,000 each, sixteen other cities range from 15,000 to 50,000 each. Vera Cruz has 20,000 and Tampico 7,000 inhabitants. All the Rio Grande towns and all the seaports (except Merida 40,000 and Matamoras 15,000) are still smaller places.

COMMUNICATIONS.

The want of means for easy and rapid communication has always been a great stumbling-block in the way of Mexican progress. But improvement in this respect has been very rapid in recent years; and there are now several lines of railroad completed and others in process of construction. At present, the great cities of the interior are connected with one another and with the seaports of Vera Cruz and Tampico by quite a network of railroads. The Rio Grande towns of Laredo, Eagle Pass and El Paso are connected by rail with the above system and also with those of the United States; and it is expected that the Pacific ports of Acapulco, San Blas, Mazatlan and others can soon be reached in the same way.

While Mexican railroads, speaking generally, may not be first-class in every respect, they doubtless would be able to concentrate any available force at or near any point of the frontier that is likely to be seriously threatened before any great progress could be made by an enemy.

The following are the principal lines:

I. The Mexican Central, from El Paso, Texas, to the City of Mexico, 1,225 miles, with branches as follows:

From	*To*	*Miles.*
*Irapuato	Guadalajara	160
Aguas Calientes	Tampico	415
Silao	Guanajuato	15
Tula	Pachuca	44

II. The Mexican International, from Eagle Pass, Texas, to Torreon Junction, where it connects with the Mexican Central:

From	*To*	*Miles.*
Eagle Pass	Torreon Junction	383
Eagle Pass	Mexico	1091
BRANCHES.		
Torreon	Durango	157
Trevino	Tampico	387

*To be continued to San Blas.

III. The Mexican National, narrow (36 inch) gauge:

From	*To*	*Miles.*
Laredo, Texas	Mexico	840
BRANCHES.		
Mexico	El Salto	39
†Acambaro	Patzcuaro	98
Laredo	Corpus Christi (U. S.)	161
‡Matamoras	San Miguel	75

IV. The Mexican Railroad:

From	*To*	*Miles.*
Vera Cruz	Mexico	263
BRANCH.		
Apizaco	Puebla	29

V. The Mexican Inter-Oceanic, narrow (36-inch) gauge:

From	*To*	*Miles.*
Vera Cruz	Mexico	340
BRANCHES.		
Mexico	Jojutla	122
‖Puebla	Chietla	64

VI. The Sinaloa and Durango:

From	*To*	*Miles.*
¶Altata (Pacific port)	Culiacan	60

VII. The Sonora Railroad:

From	*To*	*Miles.*
‡Nogales, Arizona	Guaymas	265

The Eagle Pass and Laredo lines are connected by cross-lines from Sabinas to Lampazos, and from Jaral to Saltillo (incomplete).

It should be borne in mind that the railroads are the only good communications in Mexico. There are no great paved turnpikes or highways in the country, and the river navigation amounts practically to nothing. About 7,000 miles of railway are now in operation in Mexico.

FORTRESSES.

Permanent works have been constructed at the following places: Vera Cruz, Perote, Puebla, Mexico, Acapulco and Mazatlan. The fortifications and guns of all these places are obsolete.

POSSIBLE LINES OF OPERATIONS AGAINST MEXICO.

A glance at the map shows us that there are, at present, several routes by which an American army might enter Mexico in case of war with that country. We might base ourselves on the Rio Grande and invade the country by way of El Paso, Eagle Pass or Laredo; or we might establish ourselves at Vera Cruz or Tampico on the Gulf, or at one of the Pacific ports south of Guaymas, and move thence into the interior.

†To be continued to Manzanillo, 440 miles.
‡To be continued to Monterey, 150 miles.
‖This branch to be continued to Acapulco, 200 miles.
¶This line to connect with the International.
‡Connects at Benson with Southern Pacific system.

But a little reflection will show us that distance alone puts the Pacific Coast out of the question, unless for the purpose of making diversions to assist the principal operations. It may also be doubted whether more than this would be attempted by the El Paso route.

It is assumed that any operations against Mexico must depend for decisive success upon at least the capture and occupation of Mexico City, which is not only the capital and metropolis but also the most important strategical point in the whole country, from which roads radiate in every direction. It is not assumed that this would end a war; but it might do so, and it would be a great step in that direction in any case.

The following table gives the lengths of the different lines mentioned above as possible lines of operations against Mexico:

From	*To*	*Miles.*
El Paso	Mexico	1,225
Eagle Pass (via Torreon)	"	1,091
Laredo	"	840
Tampico (via San Luis Potosi)	"	637
Vera Cruz (via Mexican railroad)	"	263
Vera Cruz (the Inter-Oceanic)	"	340
Laredo	San Luis Potosi	478
Tampico	" "	275

These figures are very significant; and it would seem that they are sufficient in themselves to settle the question of the most practicable route.

Unless Mexico had an ally who could control the sea, it would seem that the main army should be landed at or near Vera Cruz in such strength as to be able to advance at once against the capital, following either the general line of the Mexican or that of the Inter-Oceanic railroad. With a very great superiority, it *might* be found judicious to advance by both lines; for experience shows that though generally disastrous, yet *under proper circumstances*, this method of operating (on exterior or converging lines) is likely to succeed. The two lines in question are separated by lofty and rugged mountains, and reinforcement across them would be impossible.

Crossing the Tierra Caliente, the depots and an intrenched camp should be established at from thirty to fifty miles from Vera Cruz, in a suitable place, high enough above the sea to be free from yellow fever and strong enough to afford shelter to the army in case of re-

verse. No time should be unnecessarily lost in this work, but the army, as soon as it could be concentrated in sufficient strength, should move rapidly forward. This part of the country abounds in strong positions, and would probably be the scene of one or more heavy battles.

The army should be sufficiently strong to remain superior to the enemy after making occasional detachments, more particularly a very large detachment to besiege or mask the city of Puebla. This point is essential to the rapid success of the invasion; and if the army has not this strength, the campaign, at this point, would come to a stand-still and would become a struggle for the possession of Puebla, or some other special point. This would give the Mexicans time to recover from their previous defeats, improve their defenses at the capital, provision that place for a siege, raise new forces, etc. A siege-train should accompany the army to demolish the thick stone walls of churches and other buildings upon which field artillery would not make much impression.

It is proper to say that either railroad that might be selected passes through several tunnels, across ravines or cañons of great depth, along the brinks of several precipices, etc., and at several points would be very easily disabled and very difficult to repair: and it might not be a very safe reliance for the supply of a great army. We may also observe that it would undoubtedly be in running order most of the time (in our own war, bridges destroyed were rebuilt in a few days) and, also, that an old carriage road follows nearly the same course as either railroad about half way to the capital. After securing San Marcos, the intersection of the two roads, it would, perhaps, be possible to control either or both lines to Vera Cruz. The next operation would be undertaken to secure Puebla; and the next to gain possession of the capital, which might end the war. If not, then the army must leave forces to hold Puebla, Mexico City and important points of the railroad line to Vera Cruz, and must pursue and destroy the enemy's forces which would, no doubt, be found in the fertile districts to the north and west.

As regards the choice of a line for operating against Mexico, it may be well to examine the opinions of Generals SCOTT and TAYLOR —probably the most eminent authorities on this subject. Early in 1846 General SCOTT was requested to proceed to the Rio Grande, supersede TAYLOR, and invade Mexico. But he demurred, for several reasons, among them that "he did not consider the Rio Grande frontier the right basis for offensive operations against Mexico." He suggested that he be allowed, instead, to land at Vera Cruz, advance from that point, and "conquer a peace in the Halls of the Montezumas," as he termed it. For the present, the Administration would not consent to this.

Shortly after this occurred the victories of Palo Alto and Resaca de la Palma, which brought General TAYLOR at once into great prominence. From that time, he was persistently urged from Washington to adopt the plan rejected by SCOTT, and finally, against his own judgment, he did move forward, capturing Monterey (September 20th), Saltillo (November 16th), and winning the battle of Buena Vista (February 23, 1847). SCOTT says that TAYLOR, by these operations, "became *planted*, as it was impracticable—no matter with what force—to reach any vital part of Mexico by that route."

On the 16th of the following June, TAYLOR wrote to the War Department from Monterey in regard to an advance upon San Luis Potosi, which he was urged to make, as follows: "But I may be permitted to question the utility of moving, at a very heavy expense, over an extremely long line, and having no communication with the main column operating from Vera Cruz. If I were called upon to make a suggestion on the general subject of operations against Mexico, it would certainly be to hold in this quarter a defensive line and throw all the remaining troops into the other column."

The opinions of both SCOTT and TAYLOR, therefore, were strongly in favor of the Vera Cruz route. Railroads did not then exist in Mexico; now there is a railroad available along each line. It seems to us, however, that their relative merits are about the same as before. But railroads have, at least, made a decisive campaign, based on the Rio Grande, a possibility—which it never was without them.

It is not intended to discuss the Mexican War, but attention is invited to the following points:

1. The Mexicans held, upon the general theater, the advantage of interior lines, and they turned it to account. The same men who fought TAYLOR at Buena Vista in February, fought SCOTT at Cerro Gordo in April. It would seem impossible to devise a plan of campaign that will deprive Mexico of the advantage of interior lines, and her railroads have increased many fold the value of that advantage.

2. The American forces were greatly inferior in numbers in every engagement. At Buena Vista, TAYLOR had to encounter 18,000 men with 4,800; at Mexico City, SCOTT was obliged to attack 30,000 men behind strong works with only 10,000. It is true that both generals were successful, but no such risks should be necessary —the invaders should be superior in numbers.

3. Neither SCOTT nor TAYLOR could keep their communications free from the enemy, and every convoy required a considerable escort.

In many respects all accounts (American and Mexican) of the operations of this war read more like romance than history. SCOTT, TAYLOR, WOOL, DONIPHAN and KEARNEY, each with a small force, pushed hundreds of miles into unknown regions, attacked and dispersed vastly superior forces, and rapidly made themselves masters of the whole country.

Such operations can scarcely be judged by ordinary standards, but present conditions are very different from those of 1846–7, and Mexico is now far better able to take care of herself.

(*a*) During that contest ambitious chiefs were unable to lay aside their rivalries, and revolutions were attempted while the war was in progress. The government, which was then so unstable, is now virtually an empire, President DIAZ having held his present office for many years, occasionally going through the form of a reëlection.

(*b*) History shows that the Spanish race takes easily and naturally to guerilla warfare, and a country made to order for the purpose could not be more suitable for partisan operations than Mexico. These facts cut little or no figure in 1846–7, good luck of which we can scarcely expect a repetition.

(*c*) The small armies of that day subsisted on the country and, while ammunition lasted, could survive the temporary loss of communications; but the next invading armies will be of great strength—far more numerous than those of the former contest. They will of course make requisitions, but it will be impossible to subsist long by this means alone. The communications must therefore be kept open, and this will require many small and a few large detachments, the total strength of which will doubtless number many thousands.

If the main army operate by the Vera Cruz route, then along the northern frontier only diversions by comparatively small forces should be attempted. They should begin shortly before the main army begins its advance, and should have one of two results, either—

(1) To induce the enemy to make large detachments from the main army, thus assisting the principal operation; or

(2) To secure the capture of some or all the important places near the frontier, which would have a good moral effect, although it would contribute very little toward decisive success.

If there still remained a sufficient force for the purpose, after sending to Vera Cruz all the troops that were thought necessary to operate successfully on that line, it might be well to endeavor to capture Saltillo and Tampico, thereby reducing the enemy's resources, keeping the force employed, and facilitating a junction with the main army whenever that should become desirable.

In our contest with Mexico the great plateau could not have been reached without control of the sea, but railroads have now made this possible. With no fleet or merchant marine worthy of mention, and no great seaports, Mexico would seem to offer poor opportunities for naval exploits; and yet, by gaining an advantageous base for the army, a superior navy would simplify its operations in a remarkable manner. It may be fairly questioned whether control of the sea would not be quite as important in a war against Mexico and possible allies, as in any contest in which we are likely to become involved. This may be illustrated by considering what would probably be the course of a campaign against Mexico and an ally superior to us at sea.

If it were not practicable to use the sea in our operations, the problem would assume a grave aspect. The choice of a line of operations would be made from among the railroads leading into Mexico from the Rio Grande. The first effort of the main army would probably consist in a movement upon Monterey and Saltillo. Eagle Pass or Laredo would be the starting point. A choice would, no doubt, be largely influenced by topographical considerations. The Laredo route is more direct; but the Eagle Pass route favors an attack in a more effective direction and would probably be preferred at first, for this reason, and because it is a standard-gauge road, while the Laredo road is narrow-gauge, and especially because points thereon such as Trevino and Jaral must be occupied to protect the flank while moving upon Monterey and Saltillo.

Selecting the Eagle Pass route, the army would probably advance to Jaral. Holding that place by means of a detachment, it could then advance from Trevino upon Monterey and thence upon Saltillo. The Mexicans observing these movements would probably evacuate the country from the Rio Grande to Monterey, and concentrating all their available forces, would either fight a battle in defense of Monterey or Saltillo, or would retire without much fighting, beyond the desert, using both the railroad line to Tampico and that to San Luis Potosi for the purpose. It is plain that Mexico could not better serve our interests than by putting forth her whole strength in this region; just as the Russians in 1812 might have served NAPOLEON by fighting him on the Vistula, instead of which they preferred to retire among

their deserts. But the probability is that the Mexicans would evacuate this region without severe fighting, destroying the railroads, and the water tanks on the Saltillo desert. In any event, it must be occupied; and an intrenched camp would probably be formed at Monterey or Saltillo which would be occupied by a strong force to guard against an attack from Tampico and to give security to a further advance. The strategic value of this locality would be very considerable.

It would next be necessary to establish the army in the fertile and populous districts of the Great Central Plateau. The point to be ultimately secured is San Luis Potosi, as being the first important point south of the desert, on our direct line; by which line it is 240 miles from Saltillo. In the entire distance, water, in sufficient quantities for a force of some size, is found only in artificial tanks, easily destroyed by the retreating enemy. If the railroad could supply with water, as well as other necessities, a force large enough to attack San Luis Potosi with a reasonable prospect of success, the attempt should, of course, be made to advance directly. But, as this is out of the question, the army must pass to that point either by following the railroad lines to the east of the desert or by following those to the west of it.

The distances are as follows:

From Monterey to Tampico	321 miles
From Tampico to S. Luis Potosi	275 "
Total via Tampico	596 miles
From Trevino to Torreon	160 miles
From Torreon to Aguas Calientes	342 "
From A. Calientes to S. Luis Potosi	140 "
Total via Torreon	642 miles

The Tampico line is somewhat shorter; but the Torreon line passes through a far less barren country and is entirely secure from the enterprises of an allied army that might land at Tampico and interrupt the communications, should the attempt be made by the eastern line to reach San Luis Potosi.

By whichever line the attempt be made, the whole strength of Mexico will certainly be encountered. Her railroads furnish ample means for concentrating all her forces at any point between Tampico and Aguas Calientes or between the latter place and Torreon. This is her time to beat back the invading army, if she can do this at all; and the greatest battle of a war begun under such conditions might be expected before the Americans would be allowed to get possession of their objective, San Luis Potosi.

The distance from Eagle Pass to Torreon is 383 miles; to Zacatecas, 651 miles; thus the Americans, guarding a line 600 or 700 miles in length, would need vastly superior forces in order to put equal numbers in line of battle. Torreon Junction is a point of much strategical importance and, when captured, an intrenched camp would, no doubt, be established there. Detachments would occupy Chihuahua and Durango, and the resources of the country would be secured, while Mexico would be cut off from her northwestern States —about one-fourth of her area.

Under the supposed conditions, it has not been assumed that Mexico would fight a pitched battle north of Zacatecas, because guerillas, operating on the American communications, would compel them to detach so many men that their superiority of numbers would rapidly disappear. But, it has been assumed, that the great battle would be fought in defense of Aguas Calientes, because, while that point was in their possession, the Americans would not dare attempt the march on San Luis Potosi. If the Mexicans win the battle, the American campaign is checked until reinforcements enable them to resume it. If the Americans win, they establish themselves at San Luis Potosi, thus shortening their line of communications by about 250 miles, form an intrenched camp, repair the railroad in their rear, and are now prepared to move upon the capital from their new temporary base, meanwhile guarding a line 475 miles in length—a line about as long as SHERMAN'S line from Louisville to Atlanta. But the capital is still distant 365 miles.

The Mexican National Railroad is a narrow gauge road, while the other lines are of the standard gauge. The above change of base would be greatly facilitated if the two roads were of the same gauge, and this change could be made in a few days, as we know by experience. (The P., Ft. W. & C. R. R., was changed in a single day from narrow to ordinary gauge, and every regular train ran on time as usual).

With the principal army thus established at San Luis Potosi (or perhaps at Aguas Calientes), the war, so far as decisive results are concerned, has really only begun. It has progressed only as far as an European war has done when one army has crossed the frontier and has gained the first action; the army has only reached a position from which a vital part may possibly be struck.

The next operations would probably have in view the capture of Celaya Junction which would effectually isolate the capital from the north and west. But when the army finally arrived before the capital, there would be behind it a line of communications 840 miles in

length. This would have to be guarded against the efforts of a hostile population, greatly addicted to guerilla warfare. The city itself would be defended by an army behind powerful works. And an ally could land troops at Vera Cruz and send them by rail to their assistance.

To give an idea of the force necessary to guard such a line, 840 miles in length, let us compare the supposed situation with the very similar one on a much smaller scale of SHERMAN before Atlanta.* "On the 31st of August, 1864, SHERMAN had at the front about 72,000 men and in his rear about 68,000. [These numbers represent combatants only. He had besides, in his rear, an army of civilian *employés* engaged in running his trains and keeping the track in repair.] His main line, Louisville, Nashville, Stevenson, Chattanooga, the Chattahoochee Bridge, Red Oak, was about 480 miles. * * * It is worthy of note that the portion of the line north of Chattanooga was held by about 533 men per *étape* [distance of fifteen miles], while that from Chattanooga to Red Oak required a force per *étape* of 3,500 men."

When we consider the force necessary to conduct an operation such as the above, and estimate the strength that would necessarily be employed in guarding the line of communications, enforcing requisitions, checking partisan operations, besieging or garrisoning important places such as Monterey, Saltillo, Torreon Junction, Aguas Calientes, San Luis Potosi, Celaya, and many others, quelling uprisings, the difficulties of supply so far from the base, etc., then we begin to appreciate the magnitude of such an undertaking in case we do not control the sea.

In fact, if Mexico, in the case supposed, should make a respectable resistance, according to the numbers of her population and the advantages of her topography, the conquest of that country by the overland line of operations (and without the use of the sea) would constitute a task whose magnitude would astonish some very well informed persons. And, even with control of the sea, another Mexican war will bear only a faint resemblance to the war of 1846–7 so far as the scale of the operations is concerned.

*BIGELOW, pp. 85 and 86.

FOR THE JOURNAL OF THE U.S. CAVALRY ASSOCIATION. BY LIEUT. C.L. PHILLIPS. SIXTH U.S. CAVALRY.

THE CARBINE—HOW IT SHOULD BE CARRIED MOUNTED.

By Captain JOHN PITCHER, First Cavalry, U. S. Army.

THE cavalry carbine as originally constructed was a comparatively simple and coarse weapon, which required no great care or attention to keep it in fair condition, but it has been gradually improved and refined, until it has become almost as accurate and effective a weapon as the infantry rifle. The method of carrying it on horseback, however, has changed but little within the last thirty years. According to this method, the entire weight of the carbine is supposed to be supported by the sling-belt, which passes over the left shoulder of the trooper, and the muzzle of the piece is simply steadied by the carbine boot, which is attached to the quarter strap ring of the saddle, on the right side of the horse.

The boot was originally about two inches in length and just large enough to permit the barrel to pass through as far as the top of the stock. This boot has gradually grown longer and longer until now it is about twelve inches in length, and is held in place by two straps, one attached to the quarter strap ring and the other to the cantle of the saddle. While this increase in the length of the boot has been a decided improvement, it still fails to protect the carbine or afford a convenient method of carrying it.

When I first joined the service troop commanders were constantly reproving their men for permitting the weight of the carbine to rest in the boot, but it was almost impossible to prevent them from doing so. With the increase in the length of the boot, the objection to this has apparently disappeared, and now, I believe that with but few exceptions, troop commanders permit their men to rest the entire weight of the carbine in the boot, but still require them to keep the carbine fastened to the sling-belt, thus attaching the man to the saddle, very much after the manner suggested by Derby many years ago.

The objections to the present system are many, and one has but to watch a troop mount, or to inspect their carbines after but a short march, in order to see at once what some of these objections are. In mounting you will frequently see a man land in his saddle with the carbine underneath him — a most uncomfortable position I can assure you, for I have tried it myself, and this is an accident which is liable to happen to the oldest soldier. If he escapes this accident when he lands in the saddle, he is liable to poke the horse in the back with the muzzle of his carbine, and thereby frequently starts a bucking match, which results in the carbine being thrown violently into its place on the right side, and then flopping around until the horse is quieted or until the man dismounts, to prevent further trouble.

A short time since, at Fort Custer, I saw a man thrown from his horse, and for a few seconds he hung suspended in the air by his sling-belt, while the horse was kicking at him viciously; finally, something broke and they parted company. Now, it requires but one experience of this kind to render a man very chary of attaching himself to the saddle by means of the sling-belt, and as this incident was witnessed by all the cavalry command at Custer, I have no doubt it had a decided influence upon all who saw it. The fact that a man is attached to the horse in any way, so that he cannot instantly throw himself clear of the saddle in case of accident, is apt to render him a timid and cautious rider.

These are some of the objections to the present system or method of carrying the carbine, so far as the trooper is concerned. Now, as to the effect upon the carbine itself. An inspection of the arms of a troop at the end of a comparatively short march, will show the carbines looking as if they had been through a long and hard campaign. The barrels, towards the muzzle, will be as bright as if polished with emery cloth, and badly nicked and battered from striking the spur and heel of the trooper's boot. The rear sights become loose and are frequently bent out of shape. The stocks are badly battered and worn by contact with the bar of the sling swivel. In fact, they are so badly used up that nothing but a trip to some arsenal, for general repairs, will ever put them in decent shape again. Men lose faith in their weapons when they get in this condition, and frequently it is impossible to make them believe that they are still accurate and effective guns; and really in many cases they are not.

If it be conceded that it is not necessary for the trooper to support the weight of the carbine, and that there is no objection to attaching it to the saddle, the remedy for all these troubles is a very

simple one, and one that is well known to all frontiersmen and to the Ordnance Department. This consists in substituting a long boot, or scabbard about twenty six inches in length, for the present short boot; this scabbard to be fastened to the saddle by two straps, one from the pommel and the other from the cantle, the scabbard passing under the leg of the trooper. The butt of the piece should be carried to the front, the muzzle to the rear, the barrel inclining downward at an angle of about thirty degrees. The carbine can thus be carried on either side of the horse and is held perfectly steady by the leg of the trooper. The use of this boot or scabbard gives the trooper perfectly free use of his arms, unincumbered by a dangling carbine, and will enable him to use either saber or revolver with much greater effect, and it also affords the carbine the most perfect protection possible.

About two years ago a number of such boots were made by the Ordnance Department and sent out for trial. Twenty-five of them were sent to Troop "G" of the First Cavalry, and I was informed by the troop commander, Captain WAINWRIGHT, that he had given them a thorough trial and found them satisfactory in every respect and a great improvement on the old boot. The only change which he suggested was that the lower end should be left open are partly open, so that neither rain nor dust would accumulate in the scabbard.

Now that we are about to receive a new magazine carbine, which will naturally be a little more complicated and delicate than our present weapon, it is a matter of the greatest importance that we should be provided with the best possible means of carrying it, and it is to be hoped that the Ordnance Department will at once begin the manufacture of a boot similar to the one they have already submitted for trial, but suitable for carrying the new carbine. The saving in the cost of repairs to carbines by the use of this boot will more than justify the slight additional cost of the boot, if such there be.

In the December number of the *Cavalry Service Journal*, Lieutenant SMITH of the Tenth Cavalry, has an interesting article on "Methods of Carrying the Carbine Mounted," in which he gives us a description of the methods used by the cavalry in the armies of England, France, Germany and Russia, and from a theoretical point of view, advocates the method used by the French. By this method the carbine is slung across the trooper's back by a strap similar to the one on our infantry rifle. He also comments on our present system, setting forth many of its disadvantages, and I entirely agree with him in all the objections which he names. I think, however, that Lieutenant SMITH is in error about one or two points in his

article. He starts out with the supposition that our new carbine is to be a *lighter, shorter* and *better* weapon in every way than the one we now have. The new carbine will undoubtedly be a better weapon for our use, for the reason that it is a magazine gun, if no other, but it could not well be made shorter without losing greatly in its accuracy; neither can it be made lighter than the present arm. In fact, it is to be a little longer, which will greatly increase its accuracy, and I believe a little heavier than the present carbine. But in my opinion neither of these changes will increase in the least, the difficulty of carrying it.

I have tried the French method of carrying the carbine, and found the discomfort and fatigue resulting therefrom so great that it is almost impossible for any man to endure it during the long marches to which we are liable. This method answers perfectly for the protection of the carbine, but it is ruinous to the trooper. Lieutenant SMITH objects seriously to what he calls the "cow-boy" method of carrying the carbine, which is the one I strongly advocate. I think that if he will try this method himself on a trip of a few hundred miles, and carefully change the adjustment of the straps until the carbine is gotten into the proper position, he will become a convert to this system, and be willing to acknowledge that the "cow-boy" method is practically about the most satisfactory that can be used. This method has recently been given a thorough trial in my troop, and I have yet to find any serious objection to it.

FORT BAYARD, N. M., Jan. 29, 1893.

—TO—

MR. L. CONSTANTINE,

ON RECEIVING FROM HIM

AN OLD SPANISH SPUR.

BY H. T. BARTLETT, FIRST MASSACHUSETTS CAVALRY, AND HEADQUARTERS BUGLER TO GENERAL HENRY E. DAVIES.

PROLOGUE.

That Asiatic gallinaceous bird
Sometimes called chanticleer, the first bestirred,
Methinks, the inventive mind of man who,
Envious of the strutting cock-a-doodle-do,
Did question Nature's course which, you all know,
Intended we should have the biggest show;
But, Nature's haste to mould the coming man,
Forgot the spurs provided in the plan:
Then, constant to the worth of her idea,
She stuck them on the legs of chanticleer.

Poor, unfinished man: thus forth projected,
Flanks exposed, and rear all unprotected,
Beheld the favored cock — his model found —
And so we wear the spur the world around.

O, Espuela Mia, where didst thou have birth?
Who brought thee, horned shape, from caves of earth —
Who woke thy slumbering — thy dreams of peace —
To roam this world where conflicts never cease;
And gave thee arms to clasp the booted heel
Of armèd men that, mounted, they might feel
Like Gods the wingèd PEGASUS upon,
Who ride to water at Mount Helicon?

Hast thou upon some tyrant's heel protruded,
Or with some bandit chief stern law eluded?

Wast thou the badge of knighthood in thy day,
Or didst thou jingle in a shameless way
With old Parthenians, spurring to the rear
From out the fight to get a glass of beer?

Didst roam with Persians wild through Holy Land,
Or track with Bedouins o'er Sahara's sand?
Vielleicht thou crossed with CÆSAR o'er the Rhine
To drink rare nectar pressed from *sonnenschein*.
Perhaps thou raised the Cross with CONSTANTINE,
And spurred 'gainst Saracens in Palestine.
Perchance some proud Hidalgo booted thee
To follow great COLUMBUS o'er the sea;
Then, chasing MAXIMILIAN helter-skelter,
This Northern clime became thy final shelter.
Thrice welcome art thou! Here beneath my roof,
Where trophies of the field and camp give proof
That thou hast found a genial home at last,
Rest easy. All thy wandering days are past.

Since wars began, the arms of nations changed
From slings and spears to guns the longest ranged;
From armoured men to armoured ships, the stride
Of centuries declare a "Great Divide"
Now past. But thou, O Spur, hast changed not;
The fertile thought that, laboring, thee begot,
Lives with thee still as in the days of yore,
Thou favored emblem in the poet's lore.

When MACBETH said, "I have no spur to prick
The sides of my intent," (to make him stick
To faint resolve) he needed only thee,
O Espuela Mia, only thee;
Wanting thy strong, stimulating rowels,
He lost his head. MACDUFF had no "bowels
Of compassion." Then stalked MACBETH again
With BANQUO's ghost, and others of that train.
Alas! for lack of guiding spur. Take heed,
My friend, in this. Do no half-hearted deed.

Get you a spur. A good, old, honest spur;
And drive its rowels deep when doubts deter
Your choice of truth and right. Mount, if you will,
Fame's plunging steed — ambition's creed — but still
Wear spurs, to keep them well confined,
And in the ranks of rectitude aligned.

Thou lookest lonely, Spur, thy rowels droop
Like captured banners of a vanquished troop;
Thy form once bright has now grown old and rusty;
The bones of him who wore thee now are dusty;
But, none the less, thy form invites the Muse
From scenes of strife, where thou hast fought to lose,

To scenes of love, where thou hast followed free
The silken skirts that danced in youthful glee;
From Bacchanalian feasts and ribald songs,
To fields where thou hast sought to right the wrongs
That cursed the race; to elevate mankind,
And spur the nations on as GOD divined.

Thou prick'st my brain afresh. Regarding thee,
I find a striking similarity —
Ah, yes! Of course! Thy brother was my friend;
And stirring days together we did spend;
He was a chap to cling to — heart of steel —
And loyal from the head down to the heel.
Thro' heated dust, thro' rain and mud we've tramped,
We've slid the fields of ice, in snow we've camped,
We've sat whole nights in saddle out on picket,
And MOSBY's men we've hunted through the thicket;
We've swum the chilling streams on many a scout,
And Treason's valiant hosts have put to rout.

As veterans both, we'll spend remaining days,
Then ride Pale Death beyond the sunset rays;
In Paradise we'll seek MAHOMET's ease
On winged steed, to fly where'er we please.
Together, then, whate'er betide below,
No ill can check the quick'ning spirit's flow
Between us. Clear it is, high heaven meant
That man in thee should find his supplement.

For further thought, I beg you will refer
To my dear friend — the good, OLD SPANISH SPUR.

NEW YORK, December 26, 1892.

CAVALRY UPON THE FIELD OF BATTLE: BY LIEUTENANT-COLONEL PREJENTSOFF, OF THE GENERAL STAFF OF THE RUSSIAN ARMY.

TRANSLATED FROM THE RUSSIAN,
BY FIRST LIEUTENANT GEORGE W. READ, FIFTH CAVALRY, U. S. ARMY.

CONCLUSION.

HISTORY proves that cavalry is in every respect an indispensable arm of the service; upon the theater of war it is the eyes and ears of the army, and upon the field of battle it is capable of the well-timed support or rescue of the other arms when they are weakened, of developing their success, of overcoming the obstinacy of the enemy; in time of reverse, it sacrifices itself to save the retreating troops of its army from complete destruction.

Under FREDERICK THE GREAT, the Prussian cavalry, being far higher in tactical training than the infantry, had priority upon the battle-fields; in the time of NAPOLEON I. the French cavalry, with less training than the other arms, acting in dense masses at the critical moments of the fight, under talented generals, coöperated brilliantly with both the infantry and artillery; at such critical moments, the other arms found well-timed support in the cavalry. After the battle the cavalry always developed the success of the other arms by a persistent pursuit of the enemy upon the field itself and upon the theater of war.

In the modern epoch, with a training equal to that of the infantry, cavalry has seldom taken an active part in battle. In the campaigns of 1866 and 1870–71, a disposition is observed on the part of the belligerents to use cavalry in conformity with its properties, but this was not carried out, and the cavalry either remained constantly inactive in battle or was sent to the attack in small bodies—simply to slaughter—without profit to the other arms of the service; or else undertook ill-timed attacks in masses with no influence upon the

course of the action. In the late campaigns an absence of initiative and an imperfect understanding of the function of their arm in battle are observed in the commanders of the cavalry, which therefore operated as a secondary arm of the service, supplementary to the infantry. The settled conviction in the cavalry that it is impossible for it to attack undisordered infantry and the frequently practiced admission upon drills and maneuvers in time of peace that every cavalry attack against infantry is unsuccessful and the cavalry annihilated, has had a very harmful influence upon all the battle training of this arm.

But we again repeat that it can never be known beforehand what virtues are possessed by a certain force of the enemy nor how high its moral condition may be, and therefore cavalry attacks against undisordered infantry should not be condemned nor the making of such attacks forbidden. On the contrary such attacks in battle should be encouraged, and they should be practiced as far as possible in the drills in time of peace.

An attack by cavalry against apparently undisordered infantry frequently saves its own infantry from attack and encourages the infantry which is attacking the enemy's position. Sending the cavalry to the attack—simply to slaughter, without obtaining any result—can only be avoided by the suitable training of the cavalry commanders. The modern individual training of cavalry is conducted in time of peace as carefully as that exacted by FREDERICK THE GREAT; but maneuvers of cavalry in masses are scarcely practiced at all, and joint drills of cavalry and infantry have begun to be carried on only very recently. The requirements of battle demand from the cavalry rapidity of movement and capacity to maneuver; valor, daring, and audacity must be incarnate in this arm. But all this can exist only upon the conditions of good men and horses, of their suitable training, of a proper armament and equipment, and of an organization adapted to the conditions of modern war. Cavalry with the full complement of horses, trained to make rapid closed attacks from great distances, knowing its place on the field of battle, and able to take a well-timed part in the fight, is the only kind that is effective in modern war.

In all European armies the cavalry has been regarded as a fit subject for controversy for more than half a century. Therefore, while the infantry and artillery have rapidly improved, the cavalry has fallen behind them more and more, gradually losing touch with them. In consequence, while the campaigns of 1866 and 1870–71

made the infantry and artillery almost one, the cavalry was frequently a sort of superfluous ballast.

Even very recently the cavalry has been looked upon rather as the brilliant troops of peace time, and in its training its use in battle has been entirely ignored. The cavalry has advanced far in the matter of caring for the horses, in attention to their exterior appearance, in manège training, and in making short, showy attacks on the smooth drill ground. It has been entirely lost sight of that modern battle-fields are broken ground, and that before coming into contact with the enemy it is necessary to discover him, for which sleek, fat horses are worthless. Horses for this service must be enduring, trained to long continued work, and inured long before to the laborious life of war time. So in the campaign of 1866 the cavalry of the adversaries showed itself entirely unprepared for its battle functions. As it had received no training in time of peace in combined forces of the three arms, nobody knew its place in action, where to post it on the battle-field, or how to organize and assign it in the composition of the tactical units of the three arms.

The best cavalry will be of no consequence unless it be in its place in battle in good season, and even then the greatest dash, boldness, and rapidity of movement will avail nothing unless the cavalry have fully prepared commanders.

It follows from the above that in our time no arm of the service needs such careful tactical training as the cavalry. The military education of this arm should be higher than in the infantry and artillery, and therefore it must be given the best complement of officers, as in the cavalry the head of the rider outweighs the horses. As we saw above, the great commanders always had broader aims in the instruction of cavalry in time of peace, and the training was conducted more carefully and was under more perfect control. It was borne in mind that in time of war the individual trooper should possess great independence, and the execution by him of a certain errand was frequently found to depend largely upon his personal discretion. The trooper must be kept to his duties the more strictly because the horse gives him a multitude of expedients to evade supervision. Still greater preparation is necessary for the cavalry officer. In time of war he must be able to perform a given duty, and must therefore have intelligence and independence, activity and presence of mind, united to a reasonable boldness and dash. If to all this there be added still, that health and physical strength are necessary to an officer, then it must be admitted that there are not a great many cavalry officers to be found in any government who

are really fitted for the very complex modern service of this arm. It was another reason for the decline of the cavalry in the present century, when this arm began to be regarded condescendingly as a battle arm of the service, and to be looked upon rather as a parade force for reviews in time of peace; and hence, it is clear, gradually arose the views of the inability of cavalry to attack infantry and artillery, and generally to take an active part in battle.

In our time more than ever the closest connection is necessary between cavalry, infantry and artillery. The cavalry frequently stands in need of infantry, and horse-artillery will almost always accompany it; cavalry commanders should therefore be acquainted with the properties of troops of the three arms of the service, which is really very seldom the case.

In French military literature the opinion is even expressed that if there is a reason for the limited action of the cavalry in battle at the present time, it is only the want of able chiefs to command it.

The French instructions of 1876 touch upon this question, among other things, and say: "It is necessary for cavalry commanders to see through the situation of the battle in the shortest interval of time and in the most complex case, and, while weighing the advantages and consequences of a decision, to execute the same without the slightest hesitation; they must be able to make an analysis under very complex conditions; must know how to discern the present object of the enemy; must conform to the operations of the artillery, under no circumstances impeding the latter; must be able to cover themselves from the enemy's fire without hindering freedom of movement in all directions, in order to envelop the enemy's flank at the opportune moment and to guard against a flank attack."

General De Brack, in his writings, lays down the following requirements for a commander of light cavalry: "(1) An exact, cool-headed and mathematical estimate of his own strength and the enemy's; (2) rapidity and accuracy in judging the moral condition of troops; (3) the ability to quickly estimate all the details of a position; to accurately determine the distance from local objects to the enemy, and the nature of the various obstacles of the locality with respect to the possibilities of attack, defense or retreat; (4) rapidity of decision and action; (5) firmness of character, the impossibility of despairing, and the ability to keep his head at the most critical moments; (6) cool-headed presence of mind, involuntarily reflected upon subordinates and constraining them to look upon all with the eyes of the commander. By adding to all the above, exemplary bravery and justice to subordinates, it is possible

to fully sketch the personality of the true cavalry commander, who, upon all occasions, is competent to command hundreds of squadrons and frequently to wrest the victory from the hands of the enemy."

To command cavalry in battle, especially in modern war, is no easy matter; in a very complex situation, on the wing—so to speak, it is necessary to profit by the mistakes of the enemy, while a single false step is irreparable. An infantry general can verbally repair an error or sometimes even change the direction of an attack; but once hurled to the charge, cavalry cannot be stopped; it continues to the end—to recall it is impossible. For a real cavalry commander, knowledge, suitable preparation, and experience are not always sufficient; he must possess a certain degree of inspiration and talent. Therefore there have not been many cavalry commanders of the kind treated of in modern military literature; in the past (as in the present) a majority of them, possessing neither the education nor the suitable training, and looking with perfect indifference upon the cavalry as a battle arm, finding the responsibility for independent operations too heavy, preferred in battle to await orders from higher authority, which were either not received at all or were received too late.

The difficulties of the ground and the strength of the infantry fire may sometimes prevent cavalry from operating in accordance with its functions in masses. But cavalry should frequently coöperate in battle with the other arms, in strong or weak bodies; it is necessary for cavalry on some occasions to support the other arms. Indeed, since the time when the greater mobility of the infantry permitted it to fight on any kind of ground and it was no longer considered necessary to choose plains for battle-fields, it has frequently been necessary for cavalry to operate in closer connection with the infantry and artillery; in order to develop the success gained by a cavalry attack, it is the duty of the infantry and artillery to support the cavalry.

As the kind of service that may be demanded of the cavalry cannot be foreseen, it would seem that a portion of the cavalry should be detached for service with the infantry, and another portion kept in mass for pure cavalry action. As it is always easier to detach suitable bodies of cavalry from a common mass, when they are needed, than to collect them,—as a principle of modern war, such details should be limited at the beginning of a battle to the smallest possible number of cavalry for service with the infantry. The more the cavalry is scattered on the battle-field, the more limited will be its usefulness; for this reason it is desirable in battle to always have a

strong cavalry force under command of a chief of cavalry. This force should not be attached to any battle unit, as that would hinder all its actions; on the contrary, depending only on its chief, it should possess the greatest independence. Thanks to its ability to move rapidly, cavalry can always speedily reach the points where its attack will have effectual results. The proper and most effective support of cavalry is horse-artillery, calculated by its fire to shatter an enemy when he is taking advantage of ground over which an attack cannot be made.

At the beginning of a fight, the place of the cavalry in the battle order is in the general reserve; but as the battle progresses, the cavalry mass should approach the battle lines in the direction of that portion of the field which, from the nature of the ground, may offer chances for the action of cavalry.

In conclusion we permit ourselves to say, that the extremely narrow use of cavalry in battle in modern campaigns has been chiefly due to the failure to train it in time of peace in accordance with its battle functions, and to its exclusiveness with respect to the other arms of the service.

The efficiency of modern small-arms should only be an incentive to the improvement of the cavalry to such a degree that in composition and training it may be no lower than the Prussian cavalry of FREDERICK THE GREAT, and may occupy in the modern epoch the first place among the troops of the three arms of the service.

MOUNTAIN SCOUTING.

By Second Lieutenant GEORGE E. STOCKLE, Tenth Cavalry, U. S. Army.

OF late years very much has been written, and ably written, concerning the proper handling of troops in scouts by small parties through wild country, such as fall to the lot of the cavalry and infantry serving on our frontier—work such as no other civilized troops except the British in northern India, have to perform. Yet it seems to me that the subject is not exhausted, inasmuch as most of these writers have not laid much stress on the minutiæ—the small details of campaigning which are sometimes essential, and always conducive, to the comfort and well-being of the men. I propose, out of my limited experience, to select a few details which may be of service to young and inexperienced officers.

The cavalry or infantry "second" generally gets the first taste of field work in the shape of an order "to proceed with ten men to-morrow morning in pursuit of a deserter," or as Paymaster's escort; or, maybe, with a larger party, he rides into the mountains with the vain hope of catching some notorious Indian renegade. What he does will depend on his individual character and the advice he may receive, and I will now proceed to give him such advice as may be thought necessary.

In the first place, have the senior non commissioned officer of your detachment report to you and receive the ration return for the party. Your packer, or teamster, will generally bring his rations from the teamster's mess, but you may be required to draw for him as well. When you use pack-mules, have your salt and sugar put up in cloth bags and your sacks of flour in grain sacks. Take part of the flour ration in hard bread. The regulations give the proportions of cooking utensils to the number of men. If you are short of transportation, the heavy Dutch ovens, though very convenient, can be dispensed with. Good bread can be made in mess-pans, using

two of different sizes—one to cover the other. If you have time, have your coffee roasted and ground before leaving the post. Two mess-boxes—a load for one mule—will be sufficient to hold ovens, pans, skillets—the kitchen, in fact, for thirty men. If you have wagon transportation, your kitchen should be packed in the back of the wagon, and in such a way that it may be the first thing unloaded. Some articles very convenient about a cook-fire are coffee pots, large pans for mixing bread, skillets and, when you can carry it, a crane, consisting of a pair of iron uprights driven into the ground to support an iron cross-bar, with small hooks to hang the kettles on. The cooks should be detailed some time before starting.

So much for subsistence. Next look up the horses of your detachment and inspect each one yourself to be sure there are no sore backs or any unshod horses with the command. I believe that horses can do the light work we have about garrisons—except, perhaps, where it is very stony—without being shod, and perhaps with advantage to them, but long marches, over varied ground, carrying a trooper and his pack, will wear down the hoof faster than Nature can replace it, and the consequence will naturally be tender-footed horses and a man dismounted. If your work is to be over frozen and icy ground, the horses should be rough-shod. A barefooted horse will travel better over slippery ground than one shod without calks, especially if the shoes have been on some time and have worn smooth. Especially should you look to the shoeing of the mules, and my belief is that, whether pack or draught, they should always be rough-shod. I have noticed that such was the practice of the best packers among those in Arizona whenever it was possible, though there they had but little trouble to fear from slippery ground.

Inspect your detachment before starting and see that each man has the articles of equipment required by regulations, and that the saddle is packed as therein prescribed. An exception to this, in my opinion, is that each man should have his side-lines carefully rolled up and packed in his locker. It keeps them from rust, and they are of as much use there as I have ever found them to be in service. A horse can stampede with them easier than if hobbled; they are sure to chafe the fetlock, and often a horse is thrown on account of the side-lines getting entangled in low brush. You may, with advantage, dispense with the carbine-sling as well. If the carbine must be attached to the person, the sling becomes a necessary part of the equipment, but so far as I can see, there is no serious objection to the soldier's putting the carbine in the boot at the preparatory command for mounting and withdrawing it after dismounting, and the man is

relieved of the inconvenience of a broad shoulder belt, not to speak of the advantage of being able to get off his horse in a hurry if the animal falls.

At this first inspection you should see to the arms and ammunition. You ought to inspect these at short intervals as long as you are out, for though old soldiers can generally be trusted to take care that their arms are always serviceable, yet young ones sometimes neglect it. I recall an incident that occurred in Arizona. Lieutenant CLARKE, Tenth Cavalry, in command of a detachment, had attacked an Indian camp. Some of his men, sent to flank a hill, did not get into the fight. Going into camp that night I saw a deer, and directed one of these men to shoot it, and then discovered that the firing-pin in his carbine had been broken off and would not explode the cartridge. I had been in charge of that part of the detachment for several days, and the blame rested with me. The pistols should invariably have but five chambers loaded and the hammer on the empty one. In the last four or five years one officer of my regiment has had a narrow escape, one private been badly wounded, and one killed, through neglect of this precaution against accident.

I have never seen the saber taken on scouts. It is certainly of no use in Indian work, whatever its value may be elsewhere.

The advantage gained by having each soldier supplied with a front and hind horse-shoe and nails for them, more than counterbalances the objection to the extra weight. Shoes generally come off on the march and, with the perversity of inanimate things, generally on the stoniest part of the road, and when the transportation is several miles in rear. One man, whose place is in rear of the column, ought to have a light shoeing hammer, and with this the shoe can be tacked on at once, no time be lost, and a horse be prevented from going lame.

So much has been written about cavalry marches, the gaits, length of halts, etc., that nothing new can be found to say on the subject. I believe in the trot as a cavalry gait, but it should alternate with the walk. Do not neglect short halts at intervals of half an hour to an hour, depending on circumstances. It rests both men and horses, and gives the latter a chance to pick up a light lunch of grass. In this connection, a quotation from FRITZWYGRAM may not be out of place. He says: "The capacity of the horse's stomach is small in comparison to his frame. He therefore requires to be fed frequently. In a state of nature the horse is almost constantly browsing and yet is rarely so full as to be unable to exert his power of flight." It certainly keeps up a horse's strength wonderfully to allow him to graze a

few minutes at intervals during the march. Besides this, if the halts are somewhat frequent, the men can take advantage of them to tighten girths, and you will have fewer stragglers from the columns.

As to the length of daily marches, you must be governed by circumstances. A march of thirty miles is a very fair average, but at a pinch, with good horses carefully ridden and well fed, you can make seventy-five miles a day for three or four consecutive days. The history of our operations against Indians on the frontier affords many examples of even more severe marching than these, made in emergencies.

The weather is an important element to consider in making long and fatiguing marches, as heat enervates horses just as it does men, while a cool atmosphere will sustain the strength. A night march, if not prolonged beyond 3 A. M., will not fatigue the horses nearly as much as the same amount of travel in the day time; but they must have rest from that time until day-break. Make haste slowly on a very long march and give your stock frequent short rests, to feed and recover their strength. The expenditure of energy in the trot is perhaps one-half more than in the walk, while it covers fully twice the distance. A gallop breaks down a horse and should be adopted only under the most exceptional circumstances. You should, when marching at the trot, give the men opportunity to adjust their saddles during the short halt you make and prohibit their stopping at other times. They will invariably waste time and then gallop to catch up with the column. When the horses are low in flesh the bed blanket should be used over the saddle blanket. A piece of linen or canvas, the size of the blanket and worn next the horse's back under the blanket, will often prevent sore back. The corona, that part of the aparejo furniture in contact with the mule's back, is lined with canvas. However careful you may be you are apt to have some sore-backed horses. On making camp these sores should be carefully washed with a light antiseptic wash—a solution of carbolic acid is good—and then greased with vaseline. Bacon grease is better than nothing, but I think the salt in it is irritating to the raw surface. Before saddling, grease the sore again and, if possible, set the saddle so as not to press on the sore. Fistulous withers can often be cured even on the march by using a crupper. The weight may be taken off sore loins by folding under the corners of the blanket, or what is a better plan, by cutting through two or three thicknesses of the blanket, holes large enough to fit over the sore. This spoils the blanket, but is sometimes necessary when the horse must be used. A careful observance of the general rules for the treatment of horses

on page 89 of "Cavalry Drill Regulations" will prevent colic, kidney disease, founder and other ills that horse-flesh is not heir to, but which are often inflicted on him by his ignorant rider.

The considerations to guide you in selecting a camp are security, water, wood and grass. You will not always find it possible to combine all these essentials to a good camp, but you can generally find a sheltered portion within a quarter or half a mile of water and close to grass. If an attack is among the possibilities, that camp is badly selected which is commanded by a hill within 500 yards, flanked at close range by a wood or thicket, or placed on a convex bend of a stream. It is useless to reiterate the principles governing outpost duties, but the neglect of them has caused the failure of a good many scouts. I shall here recall an incident. GERONIMO once passed with some twenty or more warriors within two miles of a camp where two troops of cavalry were sleeping, and in plain view from all the hillocks close to the camp, but not in view of the sentinels in the camp, and the first they knew of it was when the pursuing scouts came up.

The Apaches understand the necessity of a close lookout, and it is their invariable rule on making camp to detach some of their number to occupy sometimes the peaks near camp, sometimes two miles away. These men build a small barricade of stones and remain in observation till the camp is broken up.

If you have to use stagnant water, boil it. Sometimes you will be obliged to camp near mines, reduction works or mills. The water is apt to be unwholesome, sure to be so around copper works and, if you are to stay in their vicinity any length of time it will pay you to haul water or dig a well. Alum clears muddy water. Finding water in the desert is an art in which few but Indians can hope to excel. In the southern country you will generally find water at ten to fifteen feet where grease-wood is plentiful and green, and sacaton grass is a pretty sure indication of water at five to ten feet. Turtle doves are never found far from water. An officer of my regiment told me once that his command had been saved in Mexico by following the flight of the doves in the evening. Water can often be brought to the surface of the sandy bed of a dry mountain stream by marching the column rapidly up and down a stretch of one or two hundred yards for several minutes. A trench dug across a dry bed will fill better than one parallel to the stream. If there is a likelihood of your being obliged to make a dry camp, have the men fill their canteens at starting and have them refilled during the afternoon, if you can possibly pass by any water. I believe in watering horses often, and especially a short time before making camp, so that

they may begin grazing at once. A thirsty horse will not eat, and though there may be water at the camp, it may not be convenient to water the horses at once.

The "buffalo chip" of historic fame has disappeared, but has left a successor in stock countries that answers the purpose of fuel just as well. There is seldom any trouble about fuel, however.

In the matter of forage you will either depend on what you can purchase or on the wild grass the country affords. In the latter case, you must take what Providence sends you, but in any case keep the grass near camp for night grazing. In the former case, buy oats, if possible. Sometimes, in buying from Indians, you will have to measure the grain. A quart cup of oats weighs $1\frac{5}{16}$ pounds; of barley, $1\frac{1}{16}$ pounds; of corn, $2\frac{1}{16}$ pounds. The cubic contents of a hay-stack multiplied by $\frac{1}{8}$ for old hay and $\frac{1}{9}$ for new, give approximate weight in pounds.

As to the herd, you must be guided by circumstances. Loose herding is best for the horses, but requires a herd guard of at least two men to a relief, and there is always danger of a stampede. Hobbles are good, and can be improvised with rope or rawhide. An Austrian hobble has been described to me as follows: A one-quarter inch rope is covered with soft leather and the ends spliced to make a bight about twenty-four inches long. The bight is wrapped together from the center to within a couple of inches of each end, leaving two loops at the ends. Two short cross-sticks are firmly wrapped in about eight inches from each end, leaving two loops at the ends. In use, the loops are carried about the fetlocks and over the cross-sticks, making the hobble. As to the lariat, I will quote from an article by Captain BECK, Tenth Cavalry, in the CAVALRY JOURNAL for March, 1890. He says: "The horses and mules should be herded at night if practicable; they should always be placed on grass quickly after camping. * * * * If a march has been accomplished by noon or early in the afternoon, and the herd has been grazed until sunset, it is well to place the animals on lariat at night, if good grass can be found in the immediate vicinity of the camp. This grass should not be encroached upon during the day, but be held in reserve for use during the night. In the immediate vicinity of an active enemy, when it is almost a certainty that he will get a part, if not all of the animals, if they are loose at any distance from the camp, the lariat should be used as a means of safety, and there are various ways in which to use it. The following plan secures the horses but prevents much rest for the men. Four pins are driven into the ground close together, the men to whom the

horses belong lying between the ropes, using their saddles, which rest on the picket-pins, as pillows. There was a plan adopted by several officers, in the campaign of 1874 against the Comanches, which prevented any loss of horses by stampeding, but it was not conducive to their good condition. The lariat was carried down from the halter-ring through the near front hobble of the side-line, thence along the ground to the picket-pin."

A good way to secure the lariat or picket-line where the soil is sandy and the pins will not hold, is to bury the pin two or three feet, lying horizontally, with the rope fastened to the center of the pin. Stamp the earth in the hole, and no horse can pull it up. This is mentioned in Lieutenant FARROW's "Mountain Scouting," a book that contains many valuable hints.

You will save time by taking with you a supply of Q. M. Forms No. 10, voucher to Abstract "A" for wood and forage, and Form 13, voucher to Abstract "B" for water. An emergency certificate in some such form as the following, is required: "Emergency purchase in open market for troops operating in the field. No time for notice or proposals."

It may sometimes become necessary for you to leave behind part of your load, and perhaps have to hide it in the hills. I read lately in LEWIS and CLARKE's journal a description of the caches they made near the headwaters of the Missouri where they left part of their belongings for about six months with perfect safety. They were as follows: "In the high plain on the north side of the Missouri we chose a dry situation and then describing a small circle of about twenty inches in diameter, removed the sod as gently and carefully as possible; the hole was then sunk perpendicularly for a foot deep. It was now worked gradually wider as it descended, till at length it became six or seven feet deep, shaped nearly like a kettle, or the lower part of a large still with the bottom somewhat sunk at the center. As the earth was dug it was handed up in a vessel and carefully laid on a skin or cloth, in which it was carried away and thrown into the river, so as to leave no trace of it. A floor of three or four inches in thickness was then made of dry sticks, on which was placed a hide perfectly dry. The goods, being well aired and dried, were laid on this floor and prevented from touching the wall by other dried sticks, as the merchandise was stowed away. When the hole was nearly full a skin was laid over the goods and on this earth was thrown and beaten down until, with the addition of the sod first removed, the whole was on a level with the ground, and there remained not the slightest appearance of an excavation."

For mountain work I think shoes and canvas leggins are much better than the heavy cavalry boots. The infantry outfit is excellent. A good way to dry your shoes when they are water-soaked is to fill them with grain. It absorbs the water, and swelling, counteracts the tendency of the leather to shrink.

You should have a pair of field-glasses, a compass, watch, notebook, and maps with you. Very often you will be your own surgeon, and the post surgeon is a good man to ask for recommendations as to what you ought to take. He can also show you the publications of the Surgeon General's Office, describing different kinds of mule litters, chair seats, etc. I think the chair seat is particularly valuable. It is made by taking two stout sticks about three feet long, lashing a cross-stick at one end to separate them about fifteen inches, and the frame covered with canvas. The loose ends of the sticks are inserted in the cantle rings of the saddle and fastened with twine. Two rope or strap braces connect the upper end of the chair-back with the pommel rings, and the patient is thus supported in the saddle.

In conclusion, I will say that the foregoing is not intended for those older officers, who are all very competent teachers, but for the youngster who often finds himself confronted by a condition for which he has not the ghost of a theory.

CONVERSATIONS ON CAVALRY; BY PRINCE KRAFT ZU HOHENLOHE-INGELFINGEN.

TRANSLATED FROM THE GERMAN,
BY FIRST LIEUTENANT CARL REICHMANN, NINTH INFANTRY, U. S. ARMY.

FIFTH CONVERSATION, (JANUARY 10, 1886).—OF THE DECLINE OF THE PRUSSIAN CAVALRY.

H. It is a pity to see a cavalry of such excellence as that of the Great King, go thus to ruin.

S. It certainly is. But it is instructive to inquire into the causes of the decline in order to learn how to meet a similar decline in the future, if within the power of man.

H. Already during the campaign of 1806 the Prussian cavalry no longer was what it had been under FREDERICK THE GREAT. Whatever may be said as to faulty organization and leading in general, many regiments no longer came up to the very lowest standard required of a cavalry regiment.

S. Yet many accomplished as great things in 1806 as they had done in the campaigns of the last decade of the past century.

H. At the beginning of his work on the Prussian cavalry from 1806 to 1876, KŒHLER gives a condensed statement of the causes of the decline up to the year 1806. He says that already in the latter part of his life much that was injurious to the development of the arm, escaped the notice of FREDERICK THE GREAT, because his duties as monarch claimed his attention in so many directions. He refers to much that was useless, artificial and trifling in the drill forms and evolutions. After the demise of the Great King he ascribes the decline principally to the absence of one common head, an inspector general, to represent and promote the interests of the cavalry. In its organization and consequent dispersion, two regiments being attached to each brigade (division), he sees the cause of its lack of active participation in the battles of 1806.

S. I cannot entirely agree with my friend KŒHLER, whose early death is much to be deplored, in the necessity of an inspector general of cavalry to prevent its decline or deterioration, unless as, in the times of the Great King, the supreme war lord himself sets forth the requirements cavalry must come up to, an inspector-general will not be of much use either. Unless the monarch adopts the views of the inspector-general, the interests of this branch of the service are not properly taken care of; if he adopts them, an inspector-general becomes unnecessary.

H. All due respect to the authority of a monarch. But you cannot demand that a monarch shall always be the best horseman in his country.

S. That is not at all necessary. FREDERICK THE GREAT was not the best rider in his country any more than NAPOLEON I. On the contrary, there are sufficient particulars related of both to prove that riding was anything but their strong point. Nevertheless, as supreme commanders, they knew how much they must and could require of the cavalry. They followed up their demands with unyielding rigor, and that is the reason why the cavalry complied with them. The supreme commander establishes what is to be demanded of the branches of the service; the latter will govern themselves accordingly and come up to the requirements.

H. What we saw in our own artillery confirms your statement. The most important and far-reaching improvement, the introduction of rifled guns, was insisted on by our monarch, the protest of the inspector-general of artillery notwithstanding.

S. KŒHLER omitted to mention one essential cause of the decline. It was excessive economy that made the cavalry retrograde. If so many furloughed men and "freiwæchters" were left at home during the daily exercises, that there remained but seven good riders per company or fourteen per troop, as stated by MARWITZ, then the great mass of cavalry could not have been equal to the most essential requirements. In the course of a long peace the squadrons finally reach a stage where they consider the riding-hall tricks of these seven or fourteen riders as the crown and ultimate object of their labors. They will, perhaps, even detest the drill and maneuver season as one which spoils these tricks. KŒHLER has mentioned these tricks, but has not mentioned the causes which brought them about. Untimely economy and niggardliness in the most essential requirements of an army in peace must undo all arms.

H. Would that all representatives of the people would bear this in mind when considering army appropriation bills!

S. Certainly, it is to be desired. And that they would realize that such untimely economy causes, in the end, greater sacrifices in money, and is rank extravagance! For an unsuccessful war costs ten times the money saved, not to mention the accompanying shame and misery.

H. When considering this and reading MARWITZ's report, one is astonished that at the end of the past century and in 1806, there still were regiments which made good their claims to the old established glory of the Prussian cavalry.

S. That may be due to the fact that there were still some regimental commanders who had received their first instruction in SEIDLITZ's time, perhaps also a few who had served in the Seven Years' War. These men placed efficiency in the field above nice tricks learned in time of peace. Nor did they permit the abuses which went to fill the pockets of the troop commanders.

H. What abuses do you refer to? We have no reason to doubt the honesty of the then troop commanders.

S. FREDERICK THE GREAT in that sharp criticism related by SALDERN, and to which you called my attention yourself recently, said: "The troop commanders think only of filling their pockets."

H. This is true. But this profit was sanctioned by law and regulations for the purpose of defraying expenses which their salary was insufficient to meet, but which custom of the service had saddled upon their private purses. Thus the pay of the men whom they furloughed in excess of the number authorized by the War Department, went into their pockets.

S. It injures the efficiency of the troop for field service. When a regimental commander limited the number of furloughed men, more men remained in continuous service, and if he at the same time insisted upon having warlike training and riding continued, instead of devoting the major part of the work to riding tricks, then he kept the cavalry in a state of efficiency at least similar to that under SEIDLITZ.

H. Your opinion is confirmed by the fact that one regimental commander who had been out of service during the long years of the decline of the cavalry, imparted to his regiment a high degree of training and effective service in the wars from 1792 to 1795. I refer to BLÜCHER.

S. This was the case with several other regiments in 1806. Besides many distressing episodes testifying to the inefficiency of individual squadrons, detailed narratives of 1806 and 1807 relate many a glorious deed. "They fought like heroes," says many a report.

H. But generally speaking, in 1806 the cavalry did not begin to accomplish what might have been expected from it, having in view the Great King and SEIDLITZ. BLÜCHER himself expected more from it. In the battle of Auerstaedt he complained to the King, that in his attempt to rally the retreating cavalry, the latter instead of obeying orders, rode him down. The King replied: "They do not treat me any better, either."

S. The unfortunate organization which dispersed the cavalry instead of keeping it together in large bodies, the advanced age of many commanders incapacitated for vigorous initiative by mental and bodily infirmities, may have contributed much toward the disaster. But the fact that the cavalry was capable of bolting to the rear so as to ride down the King and BLÜCHER, proves that the major part had no command over their horses. I remind you of what I said of a cavalry capable of bolting at all, that the direction in which it bolted, was entirely a matter of accident. This fact is the best proof of the decline of the cavalry and particularly in riding efficiency of man and horse. This precludes the charge against the individuals of lack of proper spirit and courage, and hence I cannot contradict CLAUSEWITZ's opinion that in 1806 the Prussian cavalry still preserved the spirit of the SEIDLITZES and ZIETHENS. For what is the unlucky horseman to do when his horse bolts blindly?

H. The few who had control over their horses, it seems, held out before the enemy, but were overwhelmed by superior numbers. At least one would suppose this to be the case if it was everywhere as it was where LEDEBURG fought at Auerstaedt.

S. And thus the cavalry lost its best men and horses first. What remained?

H. According to HOEPFNER, and the work of the general staff on the reorganization of the army after the peace of Tilsit, and also according to KOEHLER, of 255 field squadrons with 39,700 horses, there remained seventy-six squadrons with 8,120 horses, which seventy-six squadrons were poorly mounted, poorly equipped, part of the men only partially trained.

S. It makes one shudder to think that after a war of nine months duration there should have remained but one-fifth of this imposing mass of cavalry.

H. Properly speaking the number was still smaller. For the number of seventy-six squadrons is given as that of the cavalry after the reorganization from 1807 to 1809. One would think that after the distressing experiences of 1806 and 1807 the remaining squadrons would certainly strain every nerve to restore their efficiency for

field service. They must have ridden and been trained in a warlike manner from 1807 to 1812. Much can be accomplished in five years.

S. The work must certainly have been constant, for during the years of adversity the whole army worked assiduously in the certain expectation of being called out once more to fight for the existence of Prussia and Germany. I know of individual regiments, as the Blücher Hussars and the Ziethen Hussars, that they rode and were trained during this time with industry and in accordance with the traditions handed down from SEIDLITZ's time. But were all regiments able to do this? Did they still have officers, non-commissioned officers and men of the old school? What was their formation?

H. LEDEBURG says that in 1807 he formed a squadron of Koehlers, Baireuth, Usedom and Würtemberg Hussars, Irving Dragoons, Balliodz Cuirassiers, etc.

S. And they were certainly not the best riders; most of them were perhaps furloughed men and "freiwæchters," since we have assumed that most of the best riders fell. How about the horses?

H. They were of course worse than the men. "Poorly mounted," KOEHLER calls the cavalry of 1809, without, however, citing facts in support of his statement. But he must have come in possession of such facts from the official records accessible to him. The best idea of the distressing condition of the then cavalry we gain in the work on the reorganization to which I referred above. In the beginning of January, 1811, in anticipation of a sudden attack by the French, it was intended to increase the cavalry. The squadrons were to be augmented to 125 horses and there were to be six more men than horses in each squadron "to replace the sick." The regiments retained for the present, the condemned horses "for police duties," etc., "for training recruits." But this augmentation of the cavalry never took place. For the number of horses fell so low that it seemed necessary to form three squadrons to the regiment in order to keep up the efficiency of the former.

S. How is the instruction of an organization in riding to be advanced if the recruits learn riding on condemned horses? Thus the incipient horseman does not learn how to ride, but merely how to cling to an animal broken down and weary of life. A fresh, gay cavalry spirit can be created and developed only on horses of fresh and lively paces.

H. The work further states that all the men without mounts were sent to the depots to break remounts.

S. An unfortunate measure! Do you believe that the squadrons, required as they were to be constantly ready and efficient for the field, dismounted their best men and sent them to the depots? However strict the orders may be, the troop commander will manage to keep the best men, if he must daily expect to take the field with what he has. How the remounts are trained at the depots we know from the last war. Remounts can be well trained only if the trainer takes a personal interest in each animal. Where is that interest to come from, if the horse must be transferred as soon as it has received the most necessary training?

H. We did the same thing during the last war.

S. In war the training of remounts in depots is a necessary evil; for troops facing the enemy cannot do the training.

H. The same reasons existed then. A sudden attack by the French was to be expected daily, and the state of things was more or less that of war.

S. That may be so. But it did not help the training of the horses any. Were the recruits also instructed at the depots?

H. It would seem so; for the work says of the depots in which the remounts were broken, that they corresponded to the drill depots of the regiments. Under the latter name, I suppose, are to be understood the depots for recruits.

S. Under these circumstances the cavalry cannot well have made much progress in three or four years.

H. Add to this the poor condition of the horses. I never saw any specific mention of it, but it is complained of in general. There were no breeding establishments in the country. The foundation for our present splendid condition of horse-flesh was laid only after the wars of liberation by FREDERICK WILLIAM III. Hence only such horses could be found in the country as were fit for the farmer's, not the cavalryman's use. The remounts had to be purchased abroad, but owing to the enormous cost of the war and the contributions exacted, there was no money.

S. Then there was nothing left of course but to retain condemned horses with the troop. But if economy is necessary in the most essential things, troops cannot improve, as I have already stated.

H. I am not surprised that it was not only not possible in 1811 to increase the number of horses, but that it was under serious consideration to decrease the squadrons in each regiment to three.

S. Were there not other causes also which tended to diminish the number of horses?

H. It is not impossible! I read in LEDEBURG's book (page 391)

that one of his own horses was taken with farcy and he tells quite naively that he had to sell it at a sacrifice. What would you think of an officer to-day who would sell, instead of kill, a horse infected with farcy?

S. There do not seem to have been any laws for the prevention of infectious diseases of stock.

H. This is merely a single case. But if an honorable man like LEDEBURG tells such things, it proves that he had no idea of the mischief he might have caused, and if it was possible for such an efficient troop commander to be ignorant on this point, ideas quite different from those now in vogue must have prevailed in regard to the most dangerous epidemics among horses.

S. During and after a war these infectious diseases of horses prevail in a much more violent form than in peace. It is due to the impossibility of exercising proper control over everything.

H. Certainly. We saw that in 1866 and 1870. But the principles followed by those charged with the supervision, should, at least, have been the correct ones.

S. LEDEBURG's story is a conundrum to me. For old cavalrymen from the wars of liberation told me indignantly how widespread these diseases were among the French cavalry, how little attention the French paid to them, and how carefully they had to be guarded against in our cavalry.

H. The reduction to three squadrons from four in 1811 was not carried out in most of the regiments, "because the remounts became fit for use sooner than could have been expected."

S. I do not quite understand that. A horse here and there may become fit for use in a surprisingly short time, but all the remounts? There is a suspicion that the training was precipitate to the detriment of the horses. However that may be, most regiments can hardly be presumed to have improved much in value in the years from 1807 to 1812, as concerns riding.

H. I think so too. The years 1807 and 1808 were spent in creating order, and most of the troops did not reach their proper garrisons before the end of 1808 or beginning of 1809 (the garrisons of Berlin and Potsdam not before the end of December, 1809). It was only in 1809 that the first instructions relative to training were issued, and in 1812 the major part of the cavalry again took the field.

S. If only the three years of 1809, 1810 and 1811 had been properly utilized, much might have been accomplished in that time.

H. It was some time before the higher authorities did get things into working order. In 1810 those charged with preparing a set of regulations could not agree because of the wide divergence of the views of Colonels Count LAROCHE-AYMON and VON BORSTELL, and it was 1811 before a commission was appointed to prepare a set of regulations for the cavalry. In 1810 BORSTELL prepared "instructions," which, it seems, were observed for the time being. In these instructions the point most emphasized is the preservation of the horses. The condition of the horses and the difficulty of replacing them, rendered it necessary. The work of the general staff says: "It is remarkable, however, that this sacrifice, exacted by circumstances, was later on viewed as an improvement, and that there was no return to the old principles."

S. The seed thus sown was to bear bad fruit for many years to come. As late as the fourth and fifth decades of this century the horses of many regiments were brought out of the stable three or four times per week only, and the size of the horse's belly became the measure of criticism of the troop's condition.

H. I myself recollect hearing such views expressed here and there during my early services.

S. From all this, it would seem that the improvement of the cavalry up to 1812 was not great, and depended entirely upon the individuality of regimental commanders; for some regiments formed praiseworthy exceptions.

H. After this, on the whole superficial reorganization, the cavalry took part in four campaigns. And what campaigns!

S. First the one of 1812, in which almost the whole army engaged in it, was lost.

H. In the great catastrophe two Prussian cavalry regiments only were lost, which NAPOLEON had attached to the main army. In the North old YORK took care to preserve the troops under his command.

S. Then followed immediately the campaigns of 1813 and 1814 without a break. It is not surprising that the last remnant of the old cavalrymen was destroyed, so that the cavalry could not accomplish much.

H. And yet history records splendid cavalry actions. Remember the deeds of KATZELER as the commander of the advanced guard of YORK's corps, the cavalry actions of HAYNAU, MÖCKERN, LIEBERTWOLKWITZ and LAON, not to mention other no less distinguished actions.

S. Do you count the destruction of PACTHOD's and AMEY's divi-

sions at La Fère Champenoise by cavalry alone on March 25, 1814, among the less important cavalry actions?

H. I did not count it as one of our cavalry, because there the Russian cavalry did the greater part of the work. This achievement of the cavalry at La Fère, however, loses much of its splendor if it is considered, that many charges of the cavalry were repulsed by the two divisions and that it was artillery that finally broke them.

S. According to the reports of PRINCE EUGENE of Würtemberg and his adjutant HELLDORF, some of the charges succeeded before the appearance of the artillery, and after it the cavalry had to make many charges and overcome the French infantrymen singly. The dead and wounded were lying in heaps with saber cuts on their heads. On the whole our cavalry during the wars of liberation did not come up to those expectations which, after the deeds of a SEIDLITZ, one is tempted to entertain.

H. Even in the most successful actions much remained to be desired in many particulars. Thus it is related that the commander of the Body Cuirassier regiment at Haynau, before the command march, commanded: "First squadron half left, fourth squadron half right."

S. He meant to create such a dense throng that no rider could turn around, in order that when the general runaway which he foresaw should begin, it would take place in the direction of the enemy.

H. An officer of this regiment who was in the charge also told me that afterwards everybody lost his head and no one knew what to do, because DOLFFS had fallen. Other veterans have told me that in the winter campaign of 1813 the horses of many cavalry regiments were so run down that it was next to impossible to make them move faster than a walk on soft ground, and that charges were frequently limited to moving forward at a slow pace and crying "Hurrah!"

S. That was not the case with all the regiments, otherwise the success of La Fère on the 25th of March would have been impossible. Furthermore the charge of the two Hussar regiments wearing the "skull and cross-bones" at Berry au Bac on March 14, 1814, proves that toward the end of the campaign there was still some cavalry that was in good wind. It was called "the long charge."

H. It is possible that the description of the irability of the cavalry to move had reference principally to the landwehr cavalry.

S. What would you expect the landwehr cavalry to accomplish, hastily formed as it was and poorly mounted?

H. MARWITZ gives us an idea of it. During the armistice of 1813 he drilled his newly formed landwehr cavalry regiment in the presence of the King, near Berlin. In both charges all four squadrons bolted and ran square against the city wall. His majesty said, "it was a good thing that the wall stood so firm." Success in the face of the enemy could also only be gained by "bolting." The charge at Hagelsberg, described by MARWITZ, gives an idea of it.

S. We have once before discussed the point that with cavalry at all capable of bolting, it is a matter of accident in what direction it bolts, and that it is therefore not exactly reliable. We must keep in view, however, that in 1813 in the majority of cases, line and landwehr cavalry were united in the same brigade, reliable with unreliable cavalry.

H. To this fact may be due the contradictory reports as to the efficiency of the cavalry in these campaigns. But it is not to be wondered at, if after three such severe campaigns as those of 1812, 1813 and 1814 there remained little material that was fit for use. While on a General Staff reconnaissance, General VON REYHER once said: "In war cavalry must be guarded like the apple of the eye, or it will melt like snow in the sun." And he, General KATZELER's general staff officer, had experience in these matters.

S. Yes, it will melt if not properly trained in time of peace to overcome hardships without sustaining injury.

H. If it is considered how much good material in this melting process, in addition to the poor horses which soon break down anyway, is also lost by the enemy's bullets in battle, we may almost presume that after the campaign of 1814 nothing was left of the old cavalry.

S. It is not to be supposed that after 1814 there was more than here and there an officer's horse that was trained according to the old methods. But this could have been rectified if the traditions handed down among the men could have been kept from dying out. It is not probable that after 1814 a single private of the old time was in line. Of non-commissioned officers there were probably very few that had seen service under the Great King. How about the officers?

H. Officers who had entered the service in 1792, *i. e.*, at a time when the decline of the cavalry had already become apparent, were, after 1814, brigade and regimental commanders, like MARWITZ, WRANGEL, LEDEBURG, SOHR; some even were commanding generals, like ZIETHEN, BORSTELL; the captains and lieutenants of 1814 had almost all entered the service during the period of the greatest de-

cline of the cavalry. Of the old school there was but one general left, and that was BLÜCHER.

S. One man, no matter how great he may be, cannot alone and unaided, create a good cavalry in a short time; and he died soon after the war. For this art, the development of which requires many years, is more than any other dependent upon transmission by means of personal action, supervision and example, and cannot be produced as by magic, from instructions, orders or text-books.

H. Then we may presume that the Prussian cavalry as it was in SEIDLITZ's time, was destroyed in 1814. Hence we ought not to speak so much of the decline of the cavalry, as of its total destruction. This is the point on which I meant to come to an understanding with you to-day.

S. I cannot say you are wrong. What did the cavalry accomplish in 1815?

H. All detailed reports which we have of the battles of Ligny and Belle-Alliance, agree in this, that the cavalry as a whole did not begin to accomplish what is required by the most moderate demands. Charges were made resolutely. But we do not hear of successes gained by compact charges. The performance of security and information service also left much to be desired. How frequently had BLÜCHER's personal adjutant to leave the field marshal for patrol duty, because the latter was without accurate information (diary of Count NOSTITZ). All cavalry charges at Ligny were unfavorable to us. Whole regiments missed the proper direction, although carefully instructed by VON NOSTITZ, because they had been uncertain as to what was taking place in their immediate front. If we read MARWITZ's diary of the time succeeding the battle of Belle-Alliance, especially of the 20th of June, we see that here a body of 3,000 horse missed the finest opportunity "for a brilliant coup," because of defective and incomplete training. MARWITZ himself did not dare to carry out the simple movement of wheeling to the right by platoons and trotting past a village to the right, except by personally "preserving order in the column."

S. If at the moment of action the leader is to bother with the preservation of order among his troops, he cannot give that full attention to the leading of the whole, without which the use of the short-lived opportunities for cavalry action is not to be thought of.

H. Furthermore what did the cavalry accomplish in the pursuit after the battle of Belle-Alliance? It is a historical fact that it was principally infantry drummers advancing at the head of small groups of infantry, that repeatedly disturbed the rest of the French army

and caused it to continue its flight. General VON A., then a young cavalry lieutenant, told me that on the evening of the battle of Belle-Alliance, the cavalry to which he belonged remained a long time dismounted and inactive; that BLÜCHER rode up furious and, storming and raging, "got the cavalry on its legs," but it did not succeed in coming up with the enemy on that day. In 1815 BLÜCHER also said in a general order: "To part of the cavalry no thanks are due." (MARWITZ.)

S. No wonder if after 1815 everybody talked of the decline of the cavalry.

H. I only wonder that nobody said straight out and out, that cavalry proper no longer existed.

S. In 1816 BLÜCHER asked for the opinion of a number of cavalry generals on this point. (KOEHLER, "The Prussian Cavalry from 1806–1876.")

H. He himself considered it an established fact that during the preceding campaigns the Prussian cavalry did not accomplish what might have been properly expected. He concurs in BORSTELL's opinion, and only adds that he would prefer two or three inspector generals of cavalry to a single commanding general of this arm, which he does not wish to have separated by organization from infantry. It was very interesting to me to read this view of BLÜCHER in that particular book, because it is the only point on which I differed with my deceased friend KOEHLER PASHA.

S. BORSTELL declares the spirit of the cavalry from 1813 to 1815 to have been above doubt. He ascribes its inefficency to defective organization and faulty use. In an organization of larger regiments and squadrons (six squadrons with 175 horses each) he hoped to have a favorable means for the manifestation of force. He also criticizes the fact that during the wars from 1813 to 1815 the cavalry had received no advice or instruction from the higher commanders. He wants closed charges, but little full gallop, much rallying, instructions as to the use of cavalry and its service in the field. He advocates the thorough training of the younger officers. He declares the landwehr cavalry unfit for most of the duties of this arm.

H. Among the generals whose reports KOEHLER gives, ZIETHEN is the only one who calls attention to the defective individual training of man and horse, and points out the importance of laying more stress on it.

S. Please take notice that he asks for command of the rider over the horse, not for fine school riding.

H. In battle he wants the cavalry kept together in masses and held back until the moment for launching it has arrived. Then he wants a closed charge, the flanks covered by troops following in rear, and three lines following one another at 600 paces distance.

S. He revived some of the principles of FREDERICK THE GREAT. But it is a pity he did not point out the necessity of daily work for the horses, and the getting of them into good wind, and the use of the cavalry in front of the army for reconnaissance. He also declares landwehr cavalry to be unfit, and wants squadrons of 200 horses, and one head to all the cavalry.

H. THIELEMANN does not go into details. He gained most of his experience in the French army, the cavalry of which in spite of incompleteness of individual training and the defects of hasty, new formations, yet could show successes gained by the timely use of masses. He mostly speaks of the use of masses only, and one might infer from his remarks that he was more favorably disposed to the landwehr cavalry than BORSTELL and ZIETHEN. He wants squadrons of 160 horses.

S. MARWITZ is the one that gives his idea most plainly.

H. He at least goes into all the details. His report does not seem to be due to BLÜCHER's request for it, because it was written a year before in France, in August, 1815. He too states the cavalry to be entirely unequal to the duties of the arm. He describes how the poorly broken horses under inexperienced riders became stiff in the campaign of 1814, and how the cavalry entered upon the campaign of 1815 on horses unfit for cavalry service, because none or but few remounts could be obtained during the short period of peace. He sarcastically describes a cavalryman, who is a poor rider on a badly broken horse, as "an unfortunate being delivered over to the freaks of a brute without reason." He says that the art of riding had "nearly died out" in the cavalry, and that in the whole army there was not one young officer who knew how to train a horseman from the beginning up. He criticizes the loose front into line, the custom of observing and judging the charge from a flank instead from the front, the loose riding, and places the Bavarian and Saxon cavalries far above the Prussian. It is true, he says, that there might be regiments which formed laudable exceptions, and counts those belonging to his brigade in 1815 among them. But he insists, that what he said, applied to the great mass of the cavalry. The landwehr cavalry he does not even mention. He calls for stronger regiments in order the better to raise and foster the *esprit de corps* by means of larger corps of officers, for better horses, the restoration

of the art of riding, more rapid drill, and wants the mounted combat to be more of an individual combat "until we again can ride and move rapidly," *i. e.*, individual riding. He further demands the frequent combination of regiments of the same kind and proposes a number of amendments to the drill regulations.

S. I am surprised that none of these old gentlemen bethought himself of the principles of the Great King of keeping the horses in good wind by daily exercise and hardening them to work.

H. It surprises me most on the part of BORSTELL, for as LEDEBURG tells us, he rendered good service with his cavalry in 1807, and should have learned to what enormous efforts cavalry must be equal in order to serve its purpose.

S. In the instructions drawn up by him in 1810, too much stress is laid in the first place upon sparing the horses during the exercises. What necessity then compelled him to say, he perhaps later on, was loath to revoke in order not to contradict himself.

H. It is possible and rational. We now have established the fact that after 1815 the celebrated Prussian cavalry had vanished almost completely. The next time let us investigate how it rose anew. And then you will concede that I was not wrong in admiring and praising the achievements of our cavalry of 1870, created as it was, out of nothing, and which had become efficient in spite of fifty years of peace.

S. I told you once before that I cannot and will not call our cavalry of 1870 poor. But this does not preclude our utilizing the experiences of the war of 1870 for perfecting our cavalry.

THE DUTIES OF THE CAVALRY IN MODERN WARS.

By Second Lieutenant C. D. Rhodes, Sixth Cavalry, U. S. Army.

THE great range, marvelous accuracy, and rapidity of fire, of modern small-arms and field artillery (added to which has lately come a new and potent factor in the shape of smokeless powder), have revolutionized the war duties of all three arms of the service, and no one of them more than those of the cavalry. Without overstepping the limits of this paper by going too much into details, I shall attempt to give a resumé of the leading military opinions of the day, on the modern cavalry war duties, in the light of recent changes in arms and ammunition.

By way of preface, it may be said that nearly all the theories in regard to the wars of the near future are based on the experiences of the four last great wars, viz: the Austro-Prussian War, the War of the Rebellion, the Franco-Prussian, and Russo-Turkish Wars; and with the cavalry, we may even go back to the wars of Frederick the Great. Added to the fact that so long a period, filled with important military changes, has elapsed since these great wars, the cavalry experiences were so conflicting at that time that we cannot draw very satisfactory conclusions from actual events, but must do more or less theorizing, to work out the cavalry role in its entirety. The next great war will probably prove to us how near our theories approximate to the truth. Meanwhile all the great military powers are experimenting, and studying, and drawing their conclusions, in order not to be found wanting when the great struggle takes place.

There seem to be two bones of contention regarding the modern use of cavalry; first, in regard to its use in connection with infantry supports; and second, in regard to its ability to break a firing line of infantry. The latter question will be discussed in its proper place. As to the former, the theories seem to vary between two

extremes. One class of enthusiasts contends for the self-sufficiency of the cavalry without necessarily combining it with infantry. They hold that however valuable infantry supports may be to cover the rallying of shaken cavalry, the unvarying union of cavalry with infantry supports, cannot but detract from the dash and boldness which have always distinguished the "arme blanche," and will consequently greatly impair its efficiency. The opposite extreme of enthusiasts believe in the organization of mounted infantry, to increase the mobility of the infantry arm and enable them to keep in touch with the enemy. This, of course, will be done at the expense of a corresponding decrease in the infantry and cavalry. Between these two extremes may be found all sorts of views, inclining to the one side or the other. But the majority in both arms seems to incline to the belief that the extensive organization of mounted infantry (call them what you will—cavalrymen or infantrymen), will surely be followed by a tendency on the part of these mongrel troops, to usurp the true functions that belong to each of the arms separately, and by transforming a good infantryman into a poor cavalryman, impair the efficiency of both arms.

Without attempting to discuss the matter, which I have mentioned only to show the drift of opinion of certain writers of the day, I will proceed with a description of some of the modern duties of cavalry. The greatest function of the cavalry in modern wars will undoubtedly be to act as a screen to the operations of the main army. Hamley, indeed, favors the employment of mounted infantry for this purpose. The Germans, however, basing their faith on the successful use of cavalry for this purpose, in the Franco-Prussian War, lay the greatest stress on the value of the cavalry screen, and there are very few modern authorities who do not agree with them. At the first bugle-note, then, of war, the great cavalry screen will assemble towards the hostile frontier and cover the mobilization of the army. If it can, by bold dashes into the enemy's country, disturb or prevent the mobilization of his forces, so much the better. The mobilization having taken place, and the advance having begun into the theater of hostile operations, it is imperative to have this considerable body of cavalry far in front, interposing itself as a veil to the forces behind it, during the march, halt or bivouac.

Supposing that the advance of the cavalry screen has *not* preceded the mobilization; then, as Prince Hohenlohe says, the cavalry division must "be able in three days to gain a distance of from two to three days marches on the army. To do this, the cavalry

must march from twenty-five to thirty miles a day, while the army follows at a rate of from eleven to thirteen miles a day." In making these advance marches, the cavalry must not in any way impair its fighting efficiency; after gaining a distance of from twenty to forty miles on the main army, its marches may be shortened to correspond with those of the forces in rear.

The cavalry screen should rarely be nearer the main army than fifteen miles, and under most favorable circumstances, it may be advanced as far as from sixty to eighty miles. Having gained the prescribed distance, it should, generally speaking, act as a curtain to the forces behind—discovering the enemy's strength by causing a premature deployment of his forces; breaking through his cavalry screen and obtaining all the information possible; seizing advantageous points and holding them for the infantry and artillery; and, finally, harrassing and worrying the enemy in every possible way.

In an open country, the formation best adapted for a cavalry screen is, as SHAW describes it, "a moving outpost chain." Far in advance are the advanced scouts. Behind these and in communication with them, are "officers' patrols." Five or six miles behind these come the contact squadrons—their flanks two or three miles only from each other. Five or six miles in rear come the supporting squadrons; and eight or ten miles behind them is the reserve. The formation resembles a huge fan—the extremities overlapping the army's flanks. When any portion of the line is attacked, or upon approaching a hostile position, that portion of the screen directly in front is withheld, and, the two flanks advancing, the enemy is uncovered. In broken country and at night, "the moving outpost chain" is replaced by a system of patrols, which, though not so effectually preventing individuals from passing through the lines, guards the army against surprise. In either case, contact with the enemy having been once made, it should be maintained as closely as possible. The advanced scouts, patrols and reconnoitering parties should attempt to break through the hostile screen; and the enemy must all the time be closely watched to prevent the success of a like attempt on his part. The width of the cavalry screen thus formed will vary with the character of the ground and the position of the enemy; but it must not be so great as not to admit of information being quickly brought to the cavalry commander from the extreme flanks. The advanced patrols generally avoid fighting. Their main duty is the gaining of information concerning the enemy's supplies, forces, and dispositions, and as a rule they will fight only to prevent

a hostile reconnoitering party from gaining similar information. Unless the patrol be a secret one, it should not, on meeting the enemy, fall back and report, but should keep as near as circumstances will permit, reporting to the rear by means of couriers. It is truly said, that it is only after contact has been made, that the duties of the advanced patrols begin.

The Germans make a distinction between forced reconnaissances and reconnaissances of observation. The former seek an engagement in order to force the enemy into a premature deployment, while reconnaissances of observation have duties indicated by their name. In his letters on cavalry Prince HOHENLOHE comments on the fact that the reconnoitering and security services are not sufficiently separated. The reconnoitering patrols having for their object the obtaining of information, are pushed far to the front, in contact with the enemy; while the security patrols, having for *their* object the safety of the command, are pushed forward only a prescribed distance.

The "officers' patrols," which have been mentioned as following the advanced scouts, make reconnaissances of observation. They consist usually of an officer and a small squad of cavalrymen. These patrols do not fight, but depend for safety on concealment—their marches often being made at night. Special cavalry reconnaissances are also often made, especially when there is the likelihood of a battle, having for their object the gaining of information as to the physical character of the ground; and they introduce into their duties, more or less, topographical sketching—varying in accuracy from a hasty horseback reconnaissance to a completely finished survey. For the planning of marches and location of camps, only such information as the character of the roads, fuel and water supply, fords, bridges, etc., is necessary. But in planning a battle, a cavalry reconnaissance which will secure a more or less rough map of the topographical features of the ground, will be of the greatest importance.

To go back to the cavalry screen, from which subject I have digressed in order to touch upon the closely related reconnoitering duties of the cavalry—a certain class of critics believe that although the cavalry screen should be left free to its reconnoitering duties, it should in all cases be followed by infantry supports. These are to advance quickly to the front and seize advantageous points—communicating with the advanced cavalry by means of "gallopers." However, our United States Cavalry, which unites all the advantages of the "*arme blanche*" to ability to fight on foot whenever

necessary, will not need infantry supports behind the screen, as is suggested for European cavalry. But it is yet a somewhat mooted point whether or not the advanced cavalry should be accompanied by horse artillery.

Turning from the screening and reconnoitering duties, we come to what is perhaps of next importance—cavalry raids. This subject is of special interest to United States officers, for the reason that it was by our own generals, on both sides, that this important use of cavalry was developed during the Civil War. Cavalry raids are detached operations of a cavalry force, and have for their object the destruction of supplies of all kinds; the striking at the enemy's communications, forcing him to detach a force to preserve his communication with his base; and last but not least, the gaining of information as to the enemy's strength, position, and sources of supply. The cavalry which is designated to make the raid, must combine "extreme mobility and effective fire action." In other words, it must be able to move quickly over considerable distances, protecting itself from large forces of the enemy both by fighting and running away. Hence, since it is by the nature of its duties, made independent of aid from other arms, it must be able to fight on foot when necessary, and this, by the way, our cavalry can probably do much better than the cavalry of European nations. Raiding cavalry must be lightly equipped, and encumbered as little as possible with baggage. Whenever possible, it will depend upon the country through which the raid is made for its supplies.

And right here a few words may be said as to modern views on the use of cavalry dismounted. With all European powers, Russia alone excepted, there is the strongest prejudice against the use of cavalry dismounted. In offensive movements, they dislike putting so few effective men from a cavalry regiment on the firing line—every fourth man being a horse-holder. They claim that no carbine, however well constructed, can equal an infantry rifle, and that to make a first-rate cavalry out of a recruit, not enough time can be spared to make him shoot as well as an infantryman. Then again, the Prussian cavalryman's allowance of ammunition is limited to twenty cartridges, while the infantryman has eighty. Hence they make a strong point as to the difficulty of supplying the dismounted cavalry firing line, when it is already so difficult to supply the infantry line, supplied as they are with sixty more cartridges each than the cavalry, and armed in either case with magazine guns. In defensive action the European critics allow more latitude in the use of dismounted cavalry.

The dismounted work of our cavalry is an evolution of the Civil War, and with so much Indian fighting since that time, and the frequent stationing of cavalry at infantry headquarters, there has been a growing tendency towards slighting the legitimate mounted work for the sake of the dismounted. So much so in fact, that some critics have designated the American cavalry as mounted infantry. Although this was doubtless true with the raw cavalry regiments, organized during the first years of the war, it was not so in the last years, and has not been so since. There is doubtless in our service a tendency towards too much dismounted work, but our ability to use our carbines at such times, will not only not impair our efficiency as cavalry, but rather increase it, provided we do not neglect our legitimate mounted duties. And armed as we soon will be with a magazine carbine, and as we ought to be, with an improved saber and pistol, our efficiency should be still further increased.

And now as to the present role of cavalry upon the field of battle—a much discussed problem which is never to be really definitely settled until the next great war takes place.

"Cavalry moving out to an attack is now subject to accurate and destructive fire from artillery at all distances up to 3,000 or 3,500 yards (about two miles), and in some cases even greater; to machine-gun fire from 1,500 to 2,000 yards, which at distances less than 600 to 700 yards becomes most deadly." (MERCUR.) Added to these horrible engines of war, is the modern magazine rifle, an awful weapon against cavalry in the hands of expert marksmen. With these improvements in artillery and small arms, has come no corresponding improvement in the saber, the "*arme blanche*" of the cavalry, and this of course has caused increased attention to be given of late years to the type of carbine used and to acquiring skill in its use. From these considerations, and the vulnerability of cavalry due to their great mass, many military experts have even gone so far as to say that the day of cavalry on the field of battle is a thing of the past.

Before discussing the subject, a word as to the distinction between the cavalry division and divisional cavalry. The former is an independent division, under the direct orders of the commander-in-chief; while the divisional cavalry is a separate force, attached to a division of infantry, and under the immediate control of the division commander. As the cavalry division is a necessity, while the divisional cavalry is only a desideratum, modern authorities agree that

the cavalry division should never be broken up in order to create divisional cavalry. This was the point that General SHERIDAN labored hard to make understood when, upon being ordered to the Army of the Potomac, he found the immense cavalry force split up into driblets.

This point understood, we can proceed to the battle duties of modern cavalry. In the first place, then, before each of the great battles of the future will occur a cavalry battle, in comparison with which the cavalry fights of the past will sink into insignificance. As the two great cavalry screens of the opposing armies come in contact, each will strive to gain the mastery. The objects to be gained by this cavalry battle are, first, to gain time for the masses behind to deploy into line of battle; second, to hold on to advantageous points, suitable for artillery and infantry defense; third, the moral effect, the depression of spirits on the losing side, and the corresponding impetus given to the winning side; and last, to prevent the enemy from participating in the main battle, especially in the retreat or pursuit which will follow. No one can doubt that this grand cavalry fight will give every possible opportunity for all the skill, daring and bravery, which have distinguished the cavalry of the past.

As the battle progresses, and the infantry and artillery on both sides deploy, the firing will be inaugurated by the artillery, and the position of the cavalry division must change. Falling back, it will be concentrated on the flanks, or held in rear, ready to be launched upon either flank as occasion may require. The dangerous space of an object six feet in height, against infantry fire, is now at least 550 yards; and in order to be perfectly safe from the enemy's fire, the cavalry designed to take part in the battle must remain 2,000 yards from the enemy's firing line of infantry, and 4,000 yards from his artillery line. At these great distances, lying in wait as it were for an opportunity to strike, it will take a comparatively long time to pass over the intervening ground, even if the opportune moment can be distinguished at so great a distance; and during the precious time employed in passing over the ground, the critical moment may have flown. The extreme distance will, without a doubt, make the enemy's movements vague and indistinct. Hence, it will always be well, if possible, for the cavalry to be placed *nearer* the enemy, provided it can be protected from fire by some accident of the ground, especially if its commander can watch from adjacent high ground the progress of the battle. The absence of smoke, due

to the use of smokeless powder, will greatly facilitate his observations wherever he may be.

In the immense line of battle which modern armies will form as they advance in extended order, there will doubtless occur many breaks, due to the conformation of the ground, or to the bad judgment of those in command, where the eye of the cavalry commander will discover artillery unsupported by infantry. And here will probably occur opportunities for the divisional cavalry to perform excellent service. On the flanks the cavalry division, to which, perhaps, has been added the divisional cavalry, will, in its *offensive* role, strive to creep around the enemy's flanks. If the enemy is equally vigilant, it will here meet his cavalry, and a cavalry fight on the flanks may take place while the infantry and artillery are both occupied with the troops in their immediate front.

Many prominent military writers accept as an axiom the dictum that cavalry cannot now attack unshaken infantry. But it would be more nearly correct to say with Captain MAUDE, "A frontal attack by cavalry on steady infantry, with their fire controlled, and well disciplined, will fail." The Germans now hold, as one of their latest views, that cavalry must be *prepared* to charge even unshaken infantry; "for who," they say, "can tell whether infantry is unshaken or not, until the attempt has actually been made." As a matter of fact, the same conditions that have made it hazardous for cavalry to charge infantry, have also made it quite as likely that cavalry will find infantry shaken and demoralized.

Smokeless powder, while exposing for a long distance the charging cavalry to the aim of the infantry, will, for a similar reason, make the moral effect of the charge much greater than if wholly or partially concealed by smoke. Men's nerves will fail them, and their firing grow wild, as the line of horsemen, the earth fairly trembling under the shock, come sweeping down upon them; and the absence of smoke will cause the *direction* of the charge to be made to better advantage. And, under the rapid advance of the charge, it will also be difficult for men to preserve nerve enough to change their sights. An examination of muskets picked up on modern battle-fields, after a cavalry charge, has shown the majority of the sights to have been adjusted to long distance ranges, the owners having evidently been too much excited to notice the difference.

Again, the provisions made for supplying ammunition to the infantry, under present methods, are totally inadequate, and with magazine guns the waste of ammunition will be enormous. Cavalry,

therefore, will often charge infantry which have expended their last cartridges.

Furthermore, it takes more hits to put a cavalryman out of action than an infantryman, for the reason that a cavalryman, even when badly wounded, can finish the charge, supported by his horse. As to the greater mass of the horse and his rider, the effect of the small caliber rifle would seem, from recent experiments (conducted at Aldershot on the body of a pig), not to be as *immediately* fatal to animals as the larger caliber. That is, it may in the end, cause a greater number of fatalities, but not until the charge is finished and its effect produced. Its great range and flat trajectory will, however, cause many casualties in charges made in double rank, a formation still held in favor in most European armies.

As to *unshaken* infantry, although in the majority of cases cavalry will not *knowingly* charge such a force, yet it has been done, and probably will be done again, in order to sacrifice the cavalry for the sake of gaining time for reinforcements to arrive on the firing-line of the friendly infantry, and also, at times, to give the latter a much needed rest, after exhausting hours spent upon the firing-line.

After the great battle has been fought, the cavalry will again be called into requisition. In case of success, the victory cannot be complete unless the cavalry engage in pursuit; falling on the flanks and rear, attacking isolated and unsupported artillery, cutting off stragglers of all arms, and otherwise harrassing and contributing to the demoralization of the already shaken enemy. In case of defeat, the cavalry will be the intervening medium between the hostile pursuing cavalry and the main army, guarding the flanks and rear, and protecting the communications and supply-trains. Its presence will, if it does nothing else, rest the troops which have participated in the battle.

In either case, great cavalry battles will probably take place, after the battles of the future, as they surely will before. Whether the result of the main battle be victory or defeat, that side which has sacrificed or crippled its cavalry during the action, will find itself at an immense disadvantage in its subsequent operations. As JOMINI truly says: "If an army be deficient in cavalry, it rarely obtains a signal success, and experiences great difficulty in its retreat."

It would seem, then, to those who have considered the matter carefully, that if the action of cavalry has, by the improvements in arms and ammunition, been narrowed upon the field of battle, its

entire field of action has been increased. It still remains as important an arm as it was in former days, and in future battles we shall expect it to again achieve the glorious results that it did in the time of FREDERICK THE GREAT. But to all of us who are over-enthusiastic about any one branch of the service, it will be well to remember the words of Captain MAUDE: "The efficiency of the army may be looked upon, not as the sum of the efficiency of the three arms, but as their product; when, therefore, there is a tendency to underrate the efficiency of one arm, the army as a whole must suffer."

In the preparation of this paper, the following professional books and papers have been consulted:

MERCUR'S "Art of War."
SHAW'S "Elements of Modern Tactics."
HAMLEY'S "Operations of War."
MAUDE'S "Organization and Tactics."
Journal of U. S. Cavalry Association (fourteen articles).
Journal of Military Service Institution (seven articles).
United Service Magazine.
GALL'S "Modern Tactics."

THE CAVALRY HORSE.

By Second Lieutenant W. S. Wood, Tenth Cavalry, U. S. Army.

A GREAT many articles have been written on the cavalry horse, the type we have now, and what we ought to have. Also on the method of obtaining horses for the cavalry service. By the system at present in vogue there is great variation in the appearance of our cavalry horses, and in the extent to which they meet the needs of our service. There are a very few good animals fit, or having the natural qualities to make them fit for all the uses to which a cavalry horse is put, and capable of acquiring all the accomplishments that such an animal should have. There are others nothing more nor less than heavy draught animals, undoubtedly fair horses for this particular work, but they are not, and never could be made to be, even inferior cavalry horses. Another class is fit for nothing but light wagon horses; the remaining ones are about on a par with the average street car horse in this country, or even worse.

The horse described in Army Regulations, paragraph 1126, is undoubtedly just what we want, but we do not get him. Presumably then this class of horses is not always obtainable, at least not in large numbers. If it is desired by the Government to have good, uniform horses, such as it prescribes that boards shall buy, then there is something wrong with our system of procuring horses and it should be changed. But is the change necessary at once, or rather is it the only change that should be made?

The experience of the writer is that as a rule while the enlisted men are good riders, they are not even fair horsemen. The trouble is with their hands, which are heavy, and with their method of handling horses, which is rough. Few soldiers have the delicate touch on the bit that is an absolute necessity to good horsemanship. Some good riders are good horsemen, but all good horsemen must of necessity be good riders. Starting with correct principles, and

good, capable instructors who are horsemen, most recruits would undoubtedly become both good riders and fair horsemen. The rest could be dispensed with in the cavalry service.

In their handling of horses our soldiers are not well trained. A horse should not be handled as a Mexican handles a burro. He should be handled coolly, kindly, and firmly. The brain of the man should be more active than that of the horse. Brute force on the rider's part will never win. The horse is the stronger of the two, and will conquer at that game or be ruined. If the rider becomes angry he should be sure not to punish the horse. Better dismount until he recovers his temper. Punishment at that time will do much harm and no good. A man who cannot control his temper has no business in the cavalry service. If the horse stops the feet should not be thrown out until the leg is nearly straightened at the knee, and then the spurs thrust in as though the rider were endeavoring to break the horse's ribs. I have seen a soldier while holding a young colt that had never been bitted before, become angry, and jerk with all his strength on both reins. Men should not shout at the horses but should speak to them quietly.

Some of the poor horsemanship comes from having bad seats, and some from timidity. A timid rider will ruin any horse. There are many of these faults which are very noticeable. In order to remedy them cavalry recruits should be kept at least one year at the depot. Competent instructors should be placed over them, and they should be taught to ride, and to ride well. They should first be taught to ride bareback, arms folded, the horse being either led by a trained cavalryman mounted, or preferably be put on a longe. They should have two drills at this each day until they have acquired the proper seat, and grip of the knees and thighs. This will of course take time, but the instruction should be thorough. After this the bareback drills can be replaced every other day by drills with saddles, the longe being used as before, arms folded, or preferably a drill every morning bareback, and one later in the day using saddles. This will teach the men to apply the principles they have learned. After they are perfectly at home bareback and in the saddle at the walk, trot, and gallop, and have the correct seat, they should be given the bridle. Not until then, for the reins should not be used as a support to the recruit while he is being taught the proper seat. They should begin with the snaffle bit and then use the curb; should be practiced in keeping a light touch on the horse's mouth, and in guiding the horse by the rein. By this method the recruit will keep his seat entirely independent of the reins. The in-

structor should carefully watch each man, and make him keep a touch on the horse's mouth as though the reins were thread, light as possible, but firm. This supposes of course, that the horses are well trained, unspoiled cavalry horses, with a proper bit, and a mouth not hardened by abuse. The use of the spurs should next be taught, when and how to use them, both to punish the horse, and to assist the hand in guiding him. At the same time the men should be cautioned against their abuse. When this is completed the recruit is a good rider and a fair horseman, and ready for the mounted drills, and will learn them quickly and easily. The dismounted drills, manual of arms and saber exercises on foot, of course, can all have been taught him while he has been learning to ride. Three drills a day of an hour each are none too many for any soldier. If, at any time during this training the man shows his inability to become at least a fair horseman, he should at once be transferred to the infantry. The recruiting depots should be of sufficient size to receive the accumulation of recruits that would result from a year's service at the depot.

And leaving this subject for a moment, more attention should be given to recommending cadets from the graduating class at the Military Academy to the cavalry. No officer who cannot ride, can instruct men in riding. A cadet who does not ride fairly well, and is not a fair horseman, and a good many cadets are not, should not be recommended for the cavalry, no matter whether he stands number one or number fifty in his class. They should be graded in horsemanship and riding, and the recommendations for cavalry service should not include those below a certain point of proficiency in these branches.

To make recruits good horsemen, then, would be the first change before the horse is improved. It's all well and good to say that this training might be given to the recruits after joining their regiments, and perhaps some small part of it might be and is then given, but it is usually impracticable to do this for the reasons among others that recruits join a troop a few at a time, and at all seasons of the year: are detailed for duty in the Quartermaster's Department after four or five weeks' service with the troop; the climate of some posts is, during a good part of the year, unfavorable to outdoor exercise, and many posts are lacking in riding halls and other facilities. This all points to the necessity of a general plan.

The horse's tongue and especially the bars are delicate, sensitive organs. The slightest touch is felt. It would seem that putting the present encumbrance, called by courtesy a bit, in the mouth of a horse was a sufficient imposition on the animal, but when, in addition, a man with a hand like iron is added, what wonder is it that some horses, and often the best ones naturally, spirited, high strung animals, contract vices such as running away, rearing, falling over backwards, lying down as soon as saddled, becoming restive, etc., to say nothing of being absolutely ruined by having their jaws so fractured as to make it necessary to remove fragments of the bone, and having their tongues cut half through.

It is a very common thing to see cavalry horses bleeding at the mouth when returning from drill, due to the severity of the bits, poor riders, and the incomplete training of the animals. As between the two cavalry bits furnished by the Government to the cavalry service to-day, the curb and the snaffle, an unspoiled horse could be restrained and handled far better with the snaffle than with the curb, when the injury to his mouth and the pain caused him by the latter are considered.

I will cite two instances of the improper use of curb bits that have come under my personal observation. One, a horse which had the reputation of being a bad runaway. He was ridden with a heavy curb bit, and when running away cared apparently no more for the curb bit than if it had been the nose-band of a halter. The horse changed ownership, the curb bit was dispensed with and a common snaffle used, and this afterward changed to a rubber bar bit. From the first there was no more trouble; the horse could be easily checked at speed, and he never ran away while these bits were used. The second case: The writer while a cadet at West Point was riding a horse which was a bad runaway. The squad was out on the road and returning toward the Academy. A Government curb bit was being used. The horse was well up toward the front of the column and fighting for his head, necessitating a strong pull on the reins to hold him. My arms getting tired, I gave a strong, straight pull on the reins in order to take him to the rear of the column, where I thought he would go more quietly. According to the theory of the curb bit he should have stopped. Instead of that, he shot out as if he had been suddenly spurred or struck with a whip, and would have run away had not a cadet in front of me caught him by the rein as he passed. This was evidently caused by the fact that the curb-strap hurt him more behind the jaw than did the bit in his mouth, thus causing him to spring forward to get away from the pain. This is well illustrated in Major DWYER's work on "Bits and Bitting."

The second change before we seek to get a more perfect grade

of cavalry horse, should be to get a good cavalry bit, and whatever bit is used, it should be made by measurements to fit the horse for which it is intended. Each horse should be so provided for when he enters the cavalry service. Our horses are bitted as though all cavalry horses were made with one of three sizes of mouths for which three sizes of bits are furnished. If the bit does not fit well it is the fault of the horse for not having the right-sized mouth. As to the kind of bit we should have, one made on the principle of the Dwyer bit, fully explained in Major DWYER's "Seats and Saddles, Bits and Bitting," seems to me the best article that can be produced. The method for taking measurements for the same is also explained, together with an instrument for this purpose. I have also seen the Dwyer bit in actual use on a young horse, and it seemed to work admirably. These bits could be manufactured to fit each horse at little, if any more, expense than is the present contrivance. As to the use of two reins on this bit, curb and snaffle, if a man is a perfect horseman the curb will give the horse no more pain than will the snaffle, and should habitually be used. We cannot, however, expect to get soldiers who are more than fair horsemen, and I would therefore suggest that both reins be used the snaffle for jumping hurdles, passaging, turning on fore feet, etc. I think this better than having a separate snaffle bit. The present headstall should be done away with. Our halter should be provided with a brow band, and the bit should be attached by two snaps to the halter. This allows it to be easily slipped from the horse's mouth at any short halt a column may make, in order that the horse may graze or drink.

The horse we have now in the cavalry service is plenty good enough for the present bit, and for the horsemanship of the present soldier. Let us suppose, however, that we have a really good bit, suitable to our needs, and well trained recruits who are fair horsemen. The next step might well be toward getting more typical, more uniform and better cavalry horses; and these should be bred by the Government. The thoroughbred horse is undoubtedly the leaven that leaveneth the whole lump as far as horse-flesh is concerned.

The trotting horse is not the cavalry type as a rule, standard bred or otherwise. The Arabian is not a match for the modern thoroughbred. The Hackney approaches closer to the type, but as he gets his suitable points from thoroughbred blood combined with careful breeding, and has other points that are undesirable, why not go at once to the fountain head. In intelligence, pluck, type and speed they cannot be approached. They improve all blood. In

looking at the trotting record it will be seen that nearly all of the trotters who are at the top notch have thoroughbred blood, and close up. For example, the dead "Palo Alto," who at the time of his death, held the stallion record of 2:08¾, was half-thoroughbred, being by "Electioneer" out of the thoroughbred "Dame Winnie" by "Planet." It is the thoroughbred blood that gives them their gameness to preserve their speed. We do not need full thoroughbreds. Half-bred horses will be good enough. They will stand all climates as well as our present horse, I do not doubt. There are many thoroughbreds in Montana, also in Texas, the two extremes of climate. I know a horse in Montana, a thoroughbred grandson of "Lexington," which has run out on the range during the winters with a herd, and now is in good shape at the age of eighteen.

Taking the average service of a Government horse as ten years, and including the horses at West Point (and by the way, horses used by the cadets for riding should for obvious reasons never be used in the artillery harness), there would be required every year for the service, in the neighborhood of 700 head. Allowing for half of the animals foaled to be fillies, part of the mares each year to be barren, and part of the foals to not come up to the standard in shape, size, color, etc., in which latter case the mares bearing them should be at once disposed of, also for deaths, we should require at least 2,000 brood mares. Separate, small farms would be better than one large one. These farms should be located preferably in Kentucky, Tennessee, Virginia, and California, because these States are naturally the best suited of any in our country for raising horses. Probably a good distribution would be one in Virginia, five in Kentucky and Tennessee, and four in California. The farms in Kentucky and Tennessee could supply the more central troops. The one in Virginia the more eastern troops, as at Fort Myer and West Point, and those in California the western troops. There are numbers of other States, however, that would do.

Each of these farms should have about two hundred brood mares and five stallions, and they should be presided over by a well qualified officer as superintendent, with one or two others, equally well qualified, as assistants. Each one should also be supplied with a good veterinary surgeon. They should have the necessary buildings, paddocks, stables, hospitals, etc., and be well supplied with medicines and instruments, and all the modern horse appliances necessary. Those of the recruits above mentioned who proved to be real horsemen, and were best qualified for handling breeding stock and young animals, could be transferred to these farms, and there

should be at least one well-trained civilian horseman at each place to further instruct them in handling the youngsters. After the right men for all these places had been selected, the details should be permanent, and not changing every year or so, for that would partly nullify each man's efforts, and the good done by one might be undone by the next.

If sufficient land were purchased, a part of the grain and hay consumed at each farm might be raised on the place, an officer or a civilian, well qualified, having the immediate control of this department, and hiring a number of laborers at the proper season of the year for this work alone. Otherwise, the grain and hay could be bought.

The mares, good, close-coupled, big-barreled, stockily built animals (and I do not mean of the draught type), with good necks and heads, from three to ten years old, could be bought within greater or less distances from the farms for prices ranging from $100.00 to $200.00, the mares to be bought by competent officers and from the original owners, not from dealers who make their commission on each animal. They should have large bodies, long, sloping shoulders, and clean cut heads, necks and legs, the legs rather short than long, however, and the pelvis should be large. The stallions should be good, short-backed, well-built, intelligent thoroughbreds, and from a courageous and sound family. These could be procured in horses not quite fast enough to race, for a race horse is not what is wanted in the army, the idea being to get more of the thoroughbred shape, intelligence, endurance and courage, with the best blood possible, as the former qualities all come with the latter. The animals could be procured at the annual public sales, at from $1,000.00 to $3,000.00 apiece. They should also be bought by a man who knew what he was doing, and all the animals—mares and horses—should be inspected thoroughly by a good veterinary surgeon before being purchased. Of the foals, the fillies which were not wanted as brood mares should be sold at annual public sale. This would be of great benefit to the country at large by improving the average stock. Moreover, many valuable animals would be thus sold, and the prices realized should go some way toward paying the expenses of the establishments.

In this connection I will make a quotation from the "*Spirit of the Times*" of December 17, 1892. In commenting on the remarks of a Canadian writer, this paper says: "The haphazard system which results in 'half heavy colts and weedy nondescripts' could be more than profitably changed by means of careful selection and

the employment of the best materials. The unenlightened condition of the average farmer's mind is largely responsible for the present state of affairs. He has neither the knowledge of what his customers, the dealers, want, nor has he mastered even the elementary principles of veterinary science, which would not only make him capable of judging conformation but also of detecting unsoundness. * * * * Very rightly the writer in question advocates the use of the thoroughbred sire, and though he somewhat overestimates the volume of the demand for superlative action, he hits the right nail square on the head when he speaks of the value of blue blood tracing directly to the stud-book, in hunters. For horses such as he instances, gotten by thoroughbred sires out of big road mares, there will always be a ready market, unless, as seems impossible at the present time, society should turn its back on hunting and kindred sports. * * * * Provided thoroughbred sires, of good conformation and free from radical or hereditary unsoundness are crossed with mares carefully selected, the product can scarcely fail to be eminently marketable animals, that will sell for several times the prices fetched by what the writer quoted dubs 'gummy-legged, brittle-hoofed vulgarians.' * * * * No class of animals is so sure of a welcome reception as those indicated above."

The stallions, judicious breeding being assumed, would change often enough by death to change the blood. Stud-books should be accurately kept. To lay down a method of handling the young animals would take an article by itself. To be brief, the colts should be handled from birth, thoroughly halter-broken and well fed. While yearlings, they should be longed, practiced in jumping, and accustomed to saddle, bridle and bit, beginning with a snaffle and working up to the curb; as two-year-olds, they might be ridden some. They should also be systematically trained to stand the noise of firearms. About the bitting time they should be drilled some in the BAUCHER exercises, but not much, as this system tends to shorten the steps of a horse at the walk, trot and gallop. In fact, they should be given an education that would make them docile and fearless animals, with all the other qualities of a good cavalry horse. At the age of five years, supplied with well-fitting curb bits, they will be ready for assignment to regiments, and should be assigned directly from the farms according to color. By this plan we would obtain then a fixed type of horse, of intelligence, endurance and breeding, all of which always tell, both in horse and man, the animals sent out from central places to the regiments already sorted as to colors, and we should have docile, fearless, trained cavalry horses, instead

of green, raw, untrained brutes. The expenses of this plan would for the first few years, of necessity, be great. After that they would probably be less than under the present system; but the great improvement in our horses that would result from this plan, would more than justify its first extra expense.

With these advances another thing would be well. The veterinary surgeons with the different regiments should be men well up in their profession, and paid accordingly. They should be required at certain seasons of the year to give lectures on the anatomy of the horse, its diseases, etc., which the mounted enlisted men should be required to attend, and which the officers might also attend with profit and pleasure. The officers would of necessity, through pride, if nothing else, study up more on this important subject, which with our Indian service, has been and will be yet, one of the first requisites of a good cavalryman, viz: to be able to take intelligent care of his horses both in health and sickness. These changes made, they should be followed by a different way of drilling and of arranging the drills of horses and men, from that which the writer has seen in practice at every post at which he has been stationed. This innovation will naturally come about as the troops are more and more concentrated. Better stables, good riding halls at the northern posts at least, and hospitals for sick horses, well appointed and supplied, should also be provided. It would then no longer be necessary, which it not uncommonly is at the present day, for a veterinary surgeon to buy medicines and instruments out of his own pocket for the treatment of public animals.

THE FEEDING, WATERING AND SHOEING OF THE CAVALRY HORSE.

By Gerald E. Griffin, D. V. S., Veterinarian Fifth Cavary, U. S. Army.

THERE are four different kinds of food furnished to the service for the use of cavalry horses and mules, viz: Oats, corn, bran and hay, and a liberal allowance of each is supplied; the hay when inspected by a competent judge upon its delivery and properly stacked, is always good. There is little fault to be found with the oats and bran, except as to one or two points; but upon the corn it is determined to make a deliberate and premeditated charge, being of course restricted to a regulation gait; "it being not our style to produce needless pain, by statements that rile or that go agin the grain."

Why is it that those who cater to the horse in the service persist in furnishing corn for part of his ration when all experiences in this connection point to the conclusion that it is not the correct diet, partly or wholly, for solipeds?

Having given this question considerable thought, and having discussed it with those who are in a position to be practical authorities on subjects of this kind, the writer has been forced to one of two conclusions, and these are that corn is fed either for political reasons or upon the score of economy. If corn is fed for political reasons it is because corn is a national production grown in almost every state of the Union, and as a consequence, it is presumed that should the service refuse to purchase and use it in large quantities, the loyal representative of the Seventy-first Congressional District might, at the instigation of his corn-raising constituents, make inquiry in the House why it was that the fighting establishment endeavored to cast a slur upon this national production; and by this inquiry brew more or less trouble in the horse's supply department.

If corn is fed for economical reasons, it is because it is cheaper

than oats, and because there are so many more pounds of it to the bushel; the deaths it is responsible for among cavalry horses and mules is, as a matter of course, never taken into consideration, but it is safe to say that were the prices of the horses and mules killed annually by corn added to the price paid for the corn itself, it would be found that the same would purchase more than a sufficiency of oats, and that the amount saved annually in dollars would greatly exceed that saved at present.

And why is it that corn is not a proper food for horses and mules?

In the first place, corn is a fat producer, and so far as known we are not feeding horses and mules for the abattoir. Corn does not contain sufficient mineral salts wherewith to build up the bone—a very serious disadvantage.

Corn is difficult of digestion, even if cracked by a mill; we all know how it is cracked in the service—whole; even if mills are furnished they wear out inside of two years, when others have to be purchased to replace them. The price paid for mills could with economy be invested in oats.

Corn is deficient in nitrogenous matter, therefore energy is at a minimum when this cereal is fed.

Corn wears out the animal's molars so rapidly and so irregularly that the veterinary blacksmith's shop known among the "veterinary tools" as dental appliances, are in constant requisition to regulate the corn masticator's teeth, and the dental work has to be attended to so frequently that the unfortunate quadruped is often compelled to "gum it" in his latter years, and is condemned as unserviceable on account of defective molars, or because he cannot chew corn.

Corn is productive of intestinal pains, known popularly as colic, and is a deranger of the digestive apparatus, so much so indeed that the quantities of opium, ether, oil and aloes used to counteract its effects in this direction are astonishing. The money applied to the purchase of anodynes and cathartics could, with enomony, be invested in oats.

Corn as a food for a cavalry horse is the abomination of cavalrymen; it is not used in even third-class livery stables; it is tabooed by the express and horse-car companies. It is a capital feed for hogs, steers and chickens intended for market, as it produces fat rapidly and in abundant quantities, but as a forage or part forage for army animals it should certainly be discontinued.

The writer is satisfied from several years observation that the fatal cases of colic and acute indigestion in horses and mules are

with scarcely any exceptions due to corn, and that cases of chronic indigestion are in great part due to the use of the same food.

Do you know of a case where private horses in the service were fed corn if oats were obtainable? And why not? Because the owners of private horses knowing full well, from actual experience, the relative values of corn and oats as a food for horses, invariably feed the latter whenever it can be obtained, some of them even going so far as to feed troop horses so much less oats so that their own mounts may have a continual supply; and where a troop is fully officered and those officers mounted, it will have at least six private horses on a continuous diet of oats; this of course compelling the troop horses to eat so much more corn.

Composition of some of the cereal grains (DALTON):

	Nitrogenous Matter.	*Starch.*	*Dextrine.*	*Fat.*	*Mineral Salts.*
Barley	12.96	66.43	10.00	2.76	3.10
Oats...	14.39	60.59	9.25	5.50	3.25
Corn.....	12.50	67.55	4.00	8.80	1.25

Barley, it will be seen from the above, very nearly approaches wheat in its composition, and is almost as severe on the digestive apparatus; as a food for horses it is out of the question, except along the Mexican frontier where it is raised to better advantage than other grain. It should, however, be fed in small quantities and three times daily.

Corn, it will be observed, contains too much starch, too little sugar, too much fat, and is very deficient in mineral salts, the latter objection unfitting it as a food for growing horses whose bone is not yet fully developed.

Oats have all the ingredients in good proportion that go to make up a first-class food, and from the amount of cellulose it contains, 7.06 (while corn contains only 4.50) an animal can subsist longer upon it without hay. It requires a less amount of mastication and the quantity of saliva required to prepare it for the stomach is less than for corn, the latter being hard and flinty, thus leaving more saliva for the preparation of the hay taken in.

Of course it is understood that the remarks in this paper—except as to shoeing—apply to horses and mules in garrison. In the field anything that turns up in the shape of forage is acceptable, but while in garrison we should endeavor to so prepare and strengthen the digestive organs of our animals that they will be able to resist a corn diet when forced to it by the exigencies of the service, and this

fortifying of the digestive apparatus cannot be accomplished on a corn or part corn diet.

It will be thought by some that the mule should not be restricted entirely to oats. The mule is certainly a peculiar animal in a great many respects, and his digestive apparatus is considerably harder than that of the horse, which is why he does not show the ill effects of a corn diet so plainly. Nevertheless it is thought that a mule would do better work on oats, and the veterinarian would receive fewer calls to treat cases of unnecessary colic. Verily, so far as the corn ration is concerned, the noble horse of DEAN SWIFT'S creation has fallen into the hands of the yahoos.

The oats furnished the service by contract at the majority of army posts are exceedingly dirty, so dirty, in fact, in many instances, that it would appear as if the contractors were required to furnish a certain quantity of sand and refuse with each load delivered. Government contractors are proverbially honest and straightforward business men, so it is presumed that the oats when purchased by them are of the best quality and reasonably clean; the dirt, however, works its way into the sacks in transit. Somebody has said somewhere that a person during his life is bound to consume a peck of dirt. If this is true of ourselves, who take extraordinary precautions to have our food clean, how many pecks of dirt does a cavalry horse consume when fed on the average oats supplied by contract? A peck each month would not be too high a calculation. The oats as well as the hay should be inspected by a competent judge before being received. The average quartermaster's sergeant, especially if he is an ex-infantryman or artilleryman, knows little or nothing about grain or hay. A sack of grain or a bale of hay weighs so much, and that ends the matter so far as he is concerned. Oats have been furnished to garrisons in the service—and at reasonable contract prices too—that would not be accepted as feed by private stables as a gift unless there was none other to be had.

The bran furnished the service is of an inferior quality, and acts as a laxative by irritating the intestines; it should not be fed more than once a week, and not at all in the summer season, where the animals have free access to grass.

Salt, the most important of the mineral constituents of the body as regards its active part in the phenomena of nutrition, is not supplied in sufficiently large quantities, and what little is furnished is still further reduced by injudicious management, due to the usual false economy manifested by the authorities in everything pertaining to the horse. There is no distributing feed-box or wagon furnished, consequently one is improvised by the inventive genius of the stable men. It generally consists of an old dry-goods box, mounted on a pair of antediluvian style of wheels; the dry-goods box in question is invariably cracked in several places, and possesses numerous holes and loose joints, and into this receptacle are dumped two or more sacks of bran, and on the top of this three-fourths of the week's allowance of salt. Water by the bucketful is dashed over the whole, the salt is dissolved, the water percolates through the cracks and holes on to the ground, carrying with it any nutritious matter contained in the bran, and also a certain quantity of the salt. The animals receive the residuum, fondly believed to be a bran mash. We have become so accustomed to this kind of thing, as we have to many others, by constant association, that we fail to be struck by its lamentable absurdity. Oftentimes when the corn runs short (the bran never does), there is a sack or so of bran mixed in with the corn and oats, and this is considered by some an improvement upon the simple bran mash. Some of this compound enters the stomach unmasticated, and we know it is the portion easier of trituration.

It has been proven that the amount of salt voided by a healthy man in twenty-four hours exceeds half an ounce; therefore a man takes into his system each day more than half an ounce of salt from all sources; it is placed in his bread, soup, meat, etc., in addition to what they naturally contain, and he takes it directly from the table. The Medical Department, knowing the wants of the system in this respect, have caused to be issued to each man over half an ounce of salt per diem as part of his ration. The horse receives very little salt in his food, especially in corn, and as a consequence, has to be satisfied with what is saved from his bran mash. If man, an omniverous animal, weighing 145 pounds, requires as much as half an ounce of salt per day, even though the taste for it may to a considerable extent be acquired, surely the horse, an herbiverous animal, weighing 1,000 pounds, and partaking daily of ten to twelve times as much food as the former, requires at least twice as much salt; as an actual fact, he is furnished with less (a little over three ounces a week). As an experiment place the month's allowance of salt for a horse in a tight box where he can have constant access to the same. It will be found that it will not last over nine days. Of course there will be many exceptions. Salt should be supplied in the form known as *rock* (at least three-fourths of it), and it should be hung in convenient places in the corral, protected from the rain, where the animals could reach it whenever they felt so disposed, the loose

salt to be used in compounding the mash. There are troops of cavalry in the service who, knowing the supply of salt is insufficient, make it a point to secure the brine from the bottoms of pork barrels for their horses.

The watering of animals in the service appears to be a matter of convenience and routine, something that must be attended to a certain number of times during the day without any regard to its effect upon the animal economy. The Drill Regulations say that the horses shall be watered at morning and evening stables, and in cold weather water once a day is sufficient. There is nothing very definite about this. It does not say whether the water shall be given before or after feeding. So to strike a happy medium and at the same time relieve themselves of considerable trouble, the different regiments water after feeding in the morning and before feeding in the evening, and if you should ask why "this is thus" you will be given—in the language of the street—a stand off, for the wrong way of doing a thing is in the majority of cases the easier one, and few of us are ready to admit that we are wrong; or perhaps you will be informed it is the "custom of the service," and this latter legend smooths over all the rough places and is generally final.

From a few hints received from observations made at post mortem examinations, the writer instituted a series of experiments with reference to the feeding and watering of horses, with the following results: In the autum of 1889, a bay gelding (sixteen hands and one inch high, ten years old, teeth in good condition), suffering from farcy, was given seven pounds of good oats at 1:30 P. M., followed by three gallons of cold water at 1:55 P. M. The animal was then walked about 500 yards and shot dead by a bullet wound through the heart, death taking place at 2:20 P. M. On opening the stomach it was found to be healthy in appearance, containing very little water, a small quantity of well masticated hay, and very little oats, so small a quantity of the latter indeed, that it weighed only a little over two and one-half pounds in its wet state. Digestion in the stomach had barely commenced, as far as the oats were concerned. Upon exploration of the small intestines it was found that they contained the major portion of the feed given at 1:30 P. M., well masticated but showing very little indication of the digestive process. Deduction: At least four pounds of masticated oats had been washed into the small intestines by at least two gallons of water before it had been acted upon by the gastric secretions. Granting that at most two pounds of the oats contained in the small intestines would be digested there—although imperfectly—the remaining two pounds

would be thrown off without any benefit being derived from its nutritive properties, while, at the same time, it acted in part as an irritant to the digestive tract.

During the winter of 1889–90, a grey gelding 15.3 hands high, eight years old, used for livery purposes, teeth in fair condition, suffering from fractured thigh bone, caused by a kick, was given four gallons of cold water (chill taken off) at noon, followed immediately by a little over five pounds of good oats, (animal in slings for four hours); killed by pistol shot through the heart (in stall) at 12:40 P. M. On post mortem, stomach in healthy condition, contained a small quantity of well masticated hay, very little water, a quantity of fairly well masticated oats (showing a quantity of whole grains), acted upon to a considerable extent by the stomach. The oats when weighed balanced the scales at seven pounds. This large increase in weight was due considerably to its admixture with a portion of the hay contained in the stomach. Small intestines contained a small quantity of hay and about half a pound of masticated oats (latter not weighed). Deduction: Digestion would have gone on to its full extent in the stomach before contents would have been discharged therefrom; very nearly the whole amount of food given would have contributed to the building up of the system.

In April, 1891, six pounds of oats were given to an old black mare, teeth in very poor condition, afflicted with chronic laminitis (founder), and about to be destroyed by the owner as useless, at noon. At 3 P. M. of the same day animal destroyed by severing left jugular and bleeding to death, having, however, at 2:45 P. M., received as much water as she cared to drink. On post mortem, stomach was found to be healthy and contained a very large number of bots; contained about one gallon of water and about one quart of oats in a well digested condition, although several whole grains were observed floating around. The small intestines contained well digested, although poorly masticated, oats, the former in large quantity all along the course of the small intestines.

Several other individual cases might be cited, but without making the bad effects of watering at the wrong time more apparent.

The writer has on several occasions experimented in this line with his own horses and with the horses of the band of his regiment, and with the following results: Food (oats and corn) given to these animals, followed immediately afterwards by as much water as they wish to drink, appeared in large quantities in an undigested condition in their droppings after thirty-six hours. This state of

affairs continued as long as the experiment was kept up, the droppings becoming sour and offensive to the sense of smell in about a week. When the animals were again watered before feeding, or did not receive water for from two to three hours after feeding, their droppings after about three days became natural and possessed of that rich color, and the not unpleasant odor characteristic of the droppings of horses which are well fed, whose digestions are good, and which are in good health.

It has been observed that the horse, like man, never partakes to excess of that which is at his disposal at all times (rum excepted, so far as man is concerned). For this reason, veterinarians invariably allow their patients to have water before them continually during their illness and without reference to feeding hours. It is found that the horse enjoys his meals with greater satisfaction and instead of showing any ill results from having continued access to water, his appetite and digestion appear to improve. This has been found to apply also to horses in perfect health.

Now, instead of feeding our horses at "first call" in the morning, and immediately after feeding turning them loose in the corral (some of them—the slow eaters—are often turned out before they are half through their breakfast), where they have free access to water, which will wash more than half of the feed in an undigested mass into the small intestines, giving rise to colic, rough coat, "hide bound," ragged appearance, dull eyes, unthrifty condition, sour smelling droppings and yellow mucus membranes, productive of sundry mutterings on the part of the troop commander, continual requests for the veterinary surgeon to do something for MALONEY'S horse and HIMENSTIMER'S horse, and a determined effort on the part of the troop farrier to put the whole blame on MALONEY and HIMENSTIMER, whom he will swear can't ride a horse any better than a wooden man, and "who worries the life out of him whenever he has a pass," which is probably once a week, and instead of chasing them for an hour or so over miles of prairie with a four-line whip by way of exercise, watering them about 4 o'clock in the evening, feeding at 4:30 P. M., and allowing them to stand without water until seven the next morning, (fifteen hours every day, how would you like it yourself even in the cold winter months)? If instead of this a few more dollars were used to put a water trough in each stall, something that could be worked in sections of twelve by means of a lever (like those in the new railroad stock cars), into or out of which the water could be turned at will, having each trough to work independently, so that a "hot" horse cannot drink when placed in the stall, what a change it would make in the appearance of the horses of a troop and that in a short time; or if the horses were kept in the stable after morning feeding until 9 o'clock, or if the corral water trough was boarded over and the stable men could be depended upon not to open it until 9 A. M., it would undoubtedly have a beneficial effect upon the horse's digestive organs, although these latter plans would entail considerable suffering in summer.

The Drill Regulations say "a horse will rarely drink early in the morning." He will drink early in the morning if he is trained that way.

An officer of the writer's regiment was on a visit east about two years ago and visited the horse show in Madison Square Garden, New York. On his return while "talking horse" in the stable one evening he remarked, "I had the pleasure of seeing horses while I was on leave, but when I came back and looked at these objects (referring to the horses of his troop), it gave me the blues."

Before concluding this part of the article, the writer would ask, Did you ever see a private horse in the service, no matter how bad a horse he might be, looking "like the devil?" He may be a poor, sorry-looking steed, (something like DON QUIXOTE'S charger), while serving in the troop, but no sooner is he purchased at a condemned sale than he begins to improve, even though he may be taken care of by a groom who shows him the brush and comb to-day and tells him he will show it to him again to-morrow, and who depends upon others to water him half the time. Even this horse looks fifty per cent. better than the troop horse, because he is not turned out to the water trough immediately after feeding; because the tail is not run off him by fellows on horseback chasing him; because he is fed oats—even the groom objects to corn, although he may not care a rap for you or your horse; his instinct, we will call it, tells him corn is not the correct horse forage, because the private horses are not exposed to the cold, biting blasts and hard rains, huddled up against the lee of a picket fence or an old stable with the object in view of hardening them for the field. The private horse is kept in the stable where he has a right to remain, where the others could also remain on unpleasant days, were it not that we are afraid of the "dirt and smell" keeping them in gives rise to, which dirt and bad odor would not exist if the stables were properly constructed and properly drained.

The wretched old "screws" we are furnished with for remounts are bad enough, goodness knows, and should not be made more

wretched looking by injudicious management and poor judgment in feeding, exercising and watering. Give your own mount the same treatment that the troop horse receives and what will you have? A veritable, mulish-looking plug, and not the kind of a horse KING RICHARD offered his kingdom for. Why, with the amount of forage fed and the comparatively little hard work performed, our horses should look the very picture of equine health and strength, even if they are "streeters."

Shoeing.—*This subject it would appear is the rock upon which* cavalry and even light artillery men split. It is therefore with reluctance that the writer touches upon it (the rock), although he thinks he has a slight knowledge of the anatomy and physiology of the horse's foot.

Having closely studied the different articles on this subject, (appearing from time to time in magazines and journals), the conclusion is arrived at that there is a considerable amount of "balderdash" and "rot" written with reference to this subject. This is said without disrespect to the author of any article that has appeared in this connection.

The horse-shoe now furnished by the service is a good one: the tools used for placing it upon the hoof are also good. The only objection so far as materials are concerned, is to the nails. They are too large, and the shoe should contain only six nail holes instead of eight. Hundreds of years of practical experience have demonstrated *the fact that to enhance the usefulness of the soliped, a protection* for the foot is absolutely necessary—something that will prevent its wearing away faster than the horn can be secreted and, at the same time, not interfere with the natural movements of the animal, and until some practical chemist discovers a method by which a quarter of an inch of the wall of the hoof can be so hardened by some cheap, harmless compound easy of application that it will resist wear for four weeks, at least, at a time when the compound could again be applied, shoeing in its present form or something very nearly approaching it will have to continue, and if continued properly will do *as little injury to the foot, in fact less, than if the animal were bare-*footed.

If horse-shoeing is attended to in a perfunctory manner the re*sults will always be injurious to the feet, productive of side bone,* contracted hoof, atrophied frog, ring-bone, speedy cut, splints, spavin, interfering, unnatural gait, and all the rest of the ills that follow in the train of this evil. The so-called "necessary evil" of horse-shoeing lies not in the shoe, but in the manner of preparing the hoof for its reception. There is little use in reciting the way in which this is done in the service. We are all too well acquainted with it. If this one thing could be permanently corrected, the millennium, so far as horse-shoeing is concerned, would have surely arrived, and this millennium, with reference to the service, can be hastened by placing the horse-shoeing where it belongs—in the hands of the veterinary surgeon.

We must refer here to the "periplantar shoe and method of shoeing," introduced by Veterinary Surgeon CHARLIER of Paris, and suggested for adoption in the service by Veterinary Surgeon PICHÉ of the First Cavalry, in the last issue of the JOURNAL: "The principle of this method of shoeing is, physiologically, perfectly correct," and the shoe is the ideal one, although it has a tendency to lessen the knee action, but my esteemed colleague forgot that there are few horse-shoers in the service deserving of the name, and it takes a horse-shoer and a mechanic to apply this shoe. Therefore its adoption is out of the question. There may have been and there still may be a few good shoers in the army, but it will be found that almost without exception, they have been and are hard drinkers; men who have been discharged from shop after shop for this reason, until at length they are forced into the army. The other cobblers and horn-butchers cannot be called horse-shoers. It is an insult to an honorable and dignified trade to call them blacksmiths, as they would scarcely be allowed to pull off old shoes in a well regulated shoeing shop. The men are, with few exceptions, sober and thick-headed, resembling a horse in intelligence, one idea at a time, and this one difficult to efface, especially if it is a wrong one. Still something could be done even with these people if they were taken in time, and before the old horse-shoeing legends of some ill-advised old-timer had been instilled into them.

The veterinarian in the service might as well be a practical and theoretical horse-shoer as a professor of veterinary surgery and medicine, as he is compelled to be, by regulations and by special order, at some posts.

The army veterinary surgeon cannot afford to be an ignoramus upon any subject pertaining to his profession nowadays, although his superior training and knowledge in his especial line will avail him nothing financially, for were he an encyclopædia of veterinary medicine, and included every branch of this science to its full extent, nevertheless the War Department would manage to work it all

out of him at the fixed price of $75.00 per month, including the rank and allowances of a sergeant-major, and a library of one book, known by the attractive title of "The Farmer's Veterinary Adviser," and it should be added, "Or Every Man His Own Horse Doctor."

Captain FORBUSH of this regiment, with whom the writer discussed some of the subjects of this article, is of the opinion that although the veterinary surgeon is not supposed to be a practical iron worker, still he could take the best horse-shoer in the regiment as his lieutenant, select men with a mechanical turn of mind from the different troops, and through him and with him, give those men such instructions practically and theoretically as would fit them to shoe the horses of the regiment in the manner in which it should be done, each troop in the regiment to send a prospective horse-shoer to headquarters, where he should remain until he is fully competent to perform his duties, when, upon receipt of a certificate of competency from the veterinary surgeon, approved by the colonel or commanding officer, the man could be returned to his troop fully prepared to do his duty in a workmanlike manner, thus doing away with the cutting out of the heels, the paring of the frog, the thinning of the sole, the rasping of the walls, the mutilation of the bars, in fact, the destroying of the hoof. But some one will say this scheme is in practice at Jefferson Barracks, where there is a boss horse-shoer to instruct recruit blacksmiths. Granted, and granted again, that this gentleman knows his business thoroughly, it must be remembered that the number of horses at that depot rarely exceeds eighty, and that the number of recruits under instruction is seldom less than ten. How many horses would one of these men assist in shoeing in a month? Probably six, and after a few months of this sort of thing he is assigned to a troop as a horse-shoer. Well he gets the shoe on; we know how he fits it. After awhile the troop commander finds it necessary to have his private horses shod. He inquires as to the kind of a man he has, and the end of it is he obtains an order from the post quartermaster to have his horse shod by the post blacksmith, or Captain BLANK of troop "J" who has a good horse-shoer allows his man to do it for him.

Captain FORBUSH, while on duty at Jefferson Barracks, made a report on a scheme to improve the horse-shoers in the army, but up to date the report has not had any effect upon the old system. Such is horse-shoeing in the service, and the writer is in full accord with Captain FORBUSH in the above scheme for rectifying it.

The horse in the service has too few champions. The great effort so far as he is concerned seems to be directed towards bitting,

saddling, gaiting, shoeing and unshoeing him. Not a word about his welfare and sanitary surroundings. He is deserving of better consideration. He is our first weapon and our last refuge; our constant friend and our much abused companion; a source of exquisite pleasure and keen enjoyment; a great factor in warfare and a prominent agriculturist in times of peace, possessing

"Many a good
And useful quality, and virtue too—
Faithfulness that never can be changed
By any change of fortune; proof alike
Against unkindness, forgetfulness, and neglect;
Dependence on us, lasting as the life
And glistening even in the dying eye."

PROFESSIONAL NOTES.

ROUTES OF THE EXPEDITIONS* MADE BY THE CAVALRY —INCLUDING THE BATTLES AND ENGAGEMENTS FOUGHT IN THESE AND OTHER OPERATIONS NAMED, UNDER COMMAND OF MAJOR-GENERAL P. H. SHERIDAN, FROM THE OPENING OF THE WILDERNESS CAMPAIGN, MAY 4, 1864, TO THE SURRENDER OF THE REBEL ARMY, UNDER GENERAL JOSEPH E. JOHNSTON, APRIL 26, 1865.

THE WILDERNESS CAMPAIGN.

In the Wilderness Campaign the Cavalry Corps, Army of the Potomac, consisting of three divisions and numbering about 10,000 effective men—the advance of the army—started from the vicinity of Culpeper C. H., Va., on May 4, 1864, crossed the Rapidan and moved to Chancellorsville on the 4th and 5th, and from May 5th to 8th, the following battles and engagements were fought: Parker's Store, Craig's Meeting House and Todd's Tavern, May 5th; the Furnaces, May 6th; Todd's Tavern (second), May 7th; and Spottsylvania C. H., May 8th.

FIRST EXPEDITION.

(UNDER COMMAND OF MAJOR-GENERAL P. H. SHERIDAN.)

From Todd's Tavern, starting May 9, 1864, via Chilesburg, Anderson's Ford, Beaver Dam, Ground Squirrel Bridge, Yellow Tavern, Richmond, Meadow Bridges, Mechanicsville, Bottom's and White Oak Bridges and Malvern Hill to Haxall's Landing, arriving May 14, 1864, with the following battles and engagements: Beaver Dam, May 9th and 10th; Yellow Tavern, May 11th; Meadow Bridges or Richmond, May 12th.

RETURNING MAY 17, 1864.

Via St. Mary's Church, Jones's Bridge, Baltimore Cross Roads, Whitehouse, Lanesville, King William C. H., Aylett's and Reedy Swamp to Polecat Station, arriving May 25, 1864. Rejoining the army at this point and preceding its advance via Chesterfield Station, Mangohick Church and Hanover Town to Newcastle, arriving May 29, 1864, with the following battles and engagements: Hanover Junction, May 27th; Hawe's Shop, May 28th.

*"These expeditions are frequently referred to in reports and dispatches as "raids," whereas as the series of operations included, the strength of forces employed, the duration and extent of the marches, and the many important battles and engagements fought in their course, define them to be expeditions embracing great results."

BATTLES AROUND COLD HARBOR, (OR COOL ARBOR.)

(UNDER COMMAND OF MAJOR-GENERAL P. H. SHERIDAN.)

The First and Second Cavalry Divisions, estimated effective strength, 5,500.

Operated in the vicinity of Cold Harbor from May 30th to June 2, 1864, and the following battles and engagements were fought: Matadequin Creek, May 30th; Cold Harbor, May 31st and June 1st; Sumner's Upper Bridge, June 2d.

The Third Cavalry Division, Brigadier-General J. H. WILSON, commanding, operated from May 26th to June 15, 1864, from Ashland Station to St. Mary's Church, near the Chickahominy, and the following battles and engagements were fought: Mechump's Creek, May 31st; Ashland Station, June 1st; Hawe's Shop No. 2, June 2d; Tolopotomy, June 2d; Bethesda Church, June 11th; Long's Bridge, June 12th; White Oak Swamp, June 13th; Riddel's Shop, June 13th; Smith's Store near St. Mary's Church, June 15th.

SECOND EXPEDITION.

(UNDER COMMAND OF MAJOR-GENERAL P. H. SHERIDAN.)

The First and Second Cavalry Divisions; about 5,000 effective.

From New Castle, starting June 7, 1864, via Aylett's, Reedy Swamp, Polecat Station, Chilesburg, Brock's Bridge and Miner's Bridge, to Trevillian Station, arriving June 11, 1864, with the battle of Trevillian Station, June 11, 1864.

RETURNING JUNE 12, 1864.

Via Carpenter's Ford, Shady Grove Church, Spottsylvania Court House, Bowling Green, Newtown, Clarksville, King and Queen Court House, and back to Clarksville, thence via Dunkirk, King William Court House, Lanesville, White House, Tunstall's Station, Baltimore Cross Roads, Jones's Bridge, Charles City Court House, crossing the James River at two points—Prince George Court House, Lee's Mill, and back through Prince George Court House to Light House Point, arriving June 28, 1864, with the following battles and engagements: Mallory's Ford Cross Roads, June 12th; Tunstall's Station, June 21st; St. Mary's Church, June 24th.

June 29th, the command moved to the support of General WILSON at Ream's Station, starting from Windmill Point via Prince George C. H., and Lee's Mill to Ream's Station, returning to Light House Point July 2, 1864.

THIRD EXPEDITION.

(UNDER COMMAND OF BRIGADIER-GENERAL JAMES H. WILSON.)

The Third Cavalry Division, estimated 2,500 effective, and General KAUTZ's Cavalry Division from June 25th.

From Lee's Mills, starting June 22, 1864, via Ream's Station, Dinwiddie Court House, Mt. Level, Blacks and Whites, to Nottoway

Court House, thence diverging into two columns, the right preceding via Burke's Station, the left via Hungry Town to Meherin Station; from Meherin the entire column moved via Keysville to Roanoke Station, arriving June 25, 1864, with the following engagements: Stony Creek, June 28th; Ream's Station, June 29th.

MINE EXPLOSION AT PETERSBURG.

(UNDER COMMAND OF MAJOR-GENERAL P. H. SHERIDAN.)

The First and Second Divisions of Cavalry, strength about 5,000 effectives; General KAUTZ's Cavalry Division.

From July 26th to July 30th, the cavalry named coöperated with the Second Army Corps, in the movement made in connection with the mine explosion at Petersburg,—as shown in the route laid down from Light House Point via Broadway, Bermuda Hundred, and Deep Bottom to Darbytown, and back through Deep Bottom, Bermuda Hundred, and Broadway to Lee's Mills, with the battle of Darbytown, July 28th, and engagement at Lee's Mills, July 30th.

SHENANDOAH VALLEY CAMPAIGN.

(FROM AUGUST 6TH, TO NOVEMBER 28, 1864.)

The Cavalry of the Army of the Shenandoah composed of three Divisions; strength, 8,332 effective.

Operated in the Shenandoah Valley campaign with the following battles and engagements: Moorefield, August 7th; Toll Gate, August 11th; Cedarville, August 16th; Winchester, August 17th; Summit Point, August 21st; Kearneysville, August 25th; Kabletown, August 26th; Smithfield, August 28th; Smithfield Crossing of the Opequan, August 29th; Bunker Hill, September 2d and 3d; Abraham's Creek, September 13th; Opequan, September 19th, (infantry also engaged); Front Royal, September 21st; Fisher's Hill, September 22d, (infantry also engaged); Milford, September 22d; Luray, September 24th; Forest Hill, September 24th; Weyer's Cave, September 26th; Brown's Gap, September 26th; Waynesboro, September 28th; Mount Crawford, October 2d; Tom's Brook, October 9th; Cedar Creek, October 19th, (infantry also engaged); Milford No. 2, October 26th; Middletown, November 12th; Nineveh, November 12th.

FOURTH EXPEDITION.

(UNDER COMMAND OF BREVET MAJOR-GENERAL W. MERRITT.)

First Cavalry Division.

From Winchester, starting November 28, 1864, via Ashby's Gap, and Middleburg to Fairfax, Centerville, and other points in Loudon Valley.

RETURNING.

Via Goose Creek, Snicker's Gap and Berryville, to Winchester, arriving December 3, 1864.

FIFTH EXPEDITION.

(UNDER COMMAND OF BREVET MAJOR-GENERAL A. T. A. TORBERT.)

The First and Second Divisions of Cavalry, Army of the Shenandoah; effective strength about 4,000.

Moved from Winchester, starting December 19, 1864, via Stony Point, Front Royal, Chester Gap, Sperryville and Madison Court

House, to a point near Gordonville, arriving December 23, 1864, and the following battles and engagements were fought: Liberty Mills, December 22d, and Gordonsville, December 23d.

RETURNING DECEMBER 23, 1864.

Via Madison Court House and Culpeper Court House, to Warrenton, from thence diverging into two columns, the one proceeding via Salem, the other via White Plains and Middleburg, concentrating at Paris, and from thence proceeding via Ashby's Gap to Winchester, arriving December 28, 1864.

December 19, 1864, the Third Cavalry Division (CUSTER's) moved up to the Valley making a diversion in favor of Torbert, and the following engagement was fought: Lacey's Springs, near Harrisonburg, December 21st.

SIXTH EXPEDITION.

(UNDER COMMAND OF MAJOR-GENERAL P. H. SHERIDAN.)

The First and Third Cavalry Divisions, Army of the Shenandoah; total effective, 9,987; Major-General W. MERRITT, Chief of Cavalry, in immediate command.

From Winchester, starting February 27, 1865, via Newtown, Strasburg, Woodstock, Edinburg, Newmarket, Harrisonburg and Staunton, to Charlottesville, diverging at this point into two columns, the left proceeding via Scottsville and Howardsville, the right via South Garden and Lovingston to Newmarket, a brigade only preceding to the bridge at Duguidsville. From Newmarket the entire command moved via Scottsville to Columbia—one brigade being sent to Goochland via Pemberton Dam, returning to Columbia via Fifes. From Columbia diverging into two columns, the right moving via Fifes and over South Anna River, the left via Nancyville and Tollersville, to Frederick's Hall Station; thence diverging into two columns, the right moving via Jackson, Ground Squirrel Bridge and Ashland, the left down the railroad via Beaver Dam and Hanover Junction, joining forces at the railroad crossing of the South Anna River, from thence in parallel columns via Hanover Junction to Mount Carmel Church, thence in one column via Chesterfield Station, Mangohick Church, King William C. H., Lanesville White House, Baltimore Cross Roads, Jones's Bridge, Charles City C. H., Haxall's Landing, Deep Bottom and Bermuda Hundred, to Newmarket, in front of Petersburg, arriving March 27, 1865, where the expedition ended.

The following battles and engagements were fought during the expedition: Waynesboro No. 2, March 2d; and North Anna Bridges or Ashland No. 2, March 14th and 15th.

SEVENTH EXPEDITION.

(UNDER COMMAND OF MAJOR-GENERAL P. H. SHERIDAN.)

CAVALRY OPERATIONS APPOMATTOX CAMPAIGN.

First and Third Cavalry Divisions, Army of the Shenandoah, Major-General MERRITT, commanding, 5,700; Second Cavalry Division, Army of the Potomac, Major-General GEORGE CROOK, commanding, 3,900; General MACKENZIE's division of cavalry, Army of the James, joined the morning of April 1st, 619; total effective forces, 9,619.

From Newmarket, starting March 29, 1865, via Ream's Station and Dinwiddie Court House, to Five Forks, moving from thence in two columns, the one crossing the Southside Railroad at Ford's Sta-

tion, the other near Wilson's Station, joining again at Scott's Corners; again diverging into two columns at Long Bridge on Winticomack Creek, one moving via Mannsboro, Beaver Pond Creek and West Creek, to Jetersville, the other crossing West Creek to Burke's Station, and from thence in a northeasterly direction along the Danville Railroad, joining the balance of the forces at Jetersville. From Jetersville one division moved across the country to Paineville, returning to Jetersville via Amelia Springs.

On the 6th of April, the entire command moved forward, fighting; to Sailor Creek, thence moving in two columns, one via Farmville and thence along the railroad to Prospect Station, where it was joined by the other which moved via Prince Edward C. H.; from Prospect Station, advancing in two columns, the one along the Lynchburg Railroad, the other north of the railroad, joining at a point near Appomattox Court House.

On the 9th of April, the command advanced, fighting, to Appomattox C. H.

The following battles and engagements were fought during the expedition: Dinwiddie Court House, March 31st, (MERRITT'S and CROOK'S cavalry); Five Forks, April 1st, (MERRITT'S and MACKENZIE'S cavalry);—infantry also engaged; Scott's Corners, April 2d, (MERRITT'S and MACKENZIE'S cavalry); Sweethouse Creek, April 3d, (CUSTER'S division of MERRITT'S cavalry); Winticomack Creek, April 3d, (WELL'S brigade of MERRITT'S cavalry); Amelia Court House, April 4th and 5th, (MACKENZIE'S cavalry); Tabernacle Church, April 4th, (MERRITT'S cavalry); Amelia Springs, April 5th, (CROOK'S cavalry); Sailor's Creek, April 6th, (MERRITT'S cavalry); —infantry also engaged; Farmville, April 7th, (CROOK'S cavalry; Appomattox Station, April 8, (MERRITT'S cavalry); Appomattox Court House, April 9th, (MERRITT'S, CROOK'S and MACKENZIE'S cavalry).

RETURNING APRIL 10, 1865.

Via Prospect Station, Prince Edward Court House, and Burke's Station to Nottoway Court House, remaining at this point three days, and then proceeding, on the line of the Southside Railroad to Petersburg, arriving April 18, 1865.

EIGHTH EXPEDITION.

(UNDER COMMAND OF MAJOR-GENERAL P. H. SHERIDAN.)

First and Third Cavalry Divisions, Major-General MERRITT commanding; Second Cavalry Division, Major-General GEORGE CROOK commanding; the Sixth Army Corps (infantry), Major-General H. G. WRIGHT commanding.

The cavalry starting from Petersburg, April 24, 1865, via Dinwiddie Court House, Burchetts Bridge, Boydton, and Abbeyville, to South Boston, arriving April 28, 1865.

The infantry starting from Burkesville (Burke's Station), and moving to Danville.

THE CAVALRY RETURNING APRIL 29, 1865.

Via Wiliesburg, thence diverging into two columns, the one moving via Lewiston, the other via Hungry Town, to a point near Black and Whites, and from thence in one column, on the line of the railroad to Petersburg, arriving May 3, 1865.

THE UNITED STATES INFANTRY SOCIETY.

Under the foregoing title, there was organized at Fort Leavenworth, Kan., on April 19, 1893, an association which has long been desired by many who claim to have the best professional interests of the infantry at heart.

It has started with quite a large membership, over 200, and this will undoubtedly be increased until it embraces nearly, if not quite all, the infantry officers of our army, and many of the other arms also.

If conducted on the principles enunciated in the constitution, it will surely be a great and lasting benefit to the regular army, the National Guard and militia of the United States.

What those principles are may be fairly well understood by referring to an extract from the report of the committee on constitution, in which Captain FORNANCE, who submitted the report, said: "Owing to the continually progressive nature of the art of war, due to various changes in the progress of scientific discovery, there are elements in it different from the war of the past; as these elements are introduced, the more completely does the past cease to be an adequate standard for determining the preparation of armies for war, the more must we depend on a careful study of the conditions of the present applied to the collated experiences of past war, in which the conditions are most nearly analogous to those we shall have to face, and as that army will be in the better state of readiness which has the most carefully prepared itself for the conditions of modern war, and as the 'infantry is the mainstay and the backbone of all armies—on the infantry the brunt of the fighting falls; it suffers more in action and more on the line of march,' and as 'infantry on the battle-field, whether it gains or yields ground, irresistibly draws the other arms with it in advance or retreat,'—we deem it advisable to suggest the formation of a society of infantry officers of the military forces of the United States, for the purpose of professional improvement, unity of purpose, and the discussion of such questions as may be deemed proper for the legitimate advancement or improvement of the infantry arm of the service by means of publications, discussions, and mutual suggestions relative thereto. We therefore submit the following plan for a constitution."

From the address of the Executive Council we take the following, as further showing the reasons for the existence of our Infantry Society: "Of the object of the society and its necessity, but little need be said. It is felt by a great many infantry officers that the infantry arm is in danger of falling behind the other branches of the service in *esprit de corps*, and that consequently the professional accomplishments and usefulness of its officers are in danger of also falling below the standard maintained by the officers of the other arms. And it is further believed that the conditions complained of are largely due to the lack of a common center or head, such as the cavalry has in its 'Association,' and the artillery in its Organization at Fort Monroe. It will be the aim and object of the Infantry Society to supply this want. Through it an 'infantry feeling,' and *es-*

prit de corps, could and should be created and maintained, which would have a beneficial effect in stimulating the ambition of infantry officers, and improving the general standing and professional usefulness of the arm. * * * To officers of the army in general —those not in the infantry—the Executive Council also appeals for encouragement. The society will be conducted on broad principles. While its design is the 'professional improvement, etc.,' of the infantry, yet it will lend its influence to nothing not believed to be for the improvement of the whole army."

We believe we express the sense of the members of the Cavalry Association when we wish the United States Infantry Society the greatest possible measure of success in its new undertaking.

MEMORANDUM FOR THE GUIDANCE OF OFFICERS CONDUCTING REVOLVER PRACTICE OF A CAVALRY TROOP.

Owing to the publication of the new Drill Regulations for cavalry (which includes the manual of the pistol), and the publication of General Order No. 143, Adjutant-General's Office, Series of 1890, as well as the various decisions of the War Department on the subject, Part VIII. of Blunt's Firing Regulations for Small Arms, treating of Revolver Firing, has been so thoroughly amended that the following memorandum may be found useful for reference. The present prescribed course in revolver firing for a U. S. cavalry troop, as authorized in Blunt's Manual and modified by the above mentioned authorities, is believed to be as follows:

One month in each year is set apart for the practice, and it may either precede or follow the practice season with the carbine (it usually follows) as the department commander may direct. The subjects for the practice are all the officers and men present for duty with the troop. Revolver firing both mounted and dismounted for recruits may, however, be entirely omitted or only conducted to such an extent as the troop commander may see fit, and recruits who have not practiced will not be included in the annual troop report (Form 30-*f*) of revolver firing, but officers and all other enlisted men will be so included, and their scores considered in making up the report. (Decision Major-General commanding, May 29, 1889, published in circular Department of California, January 23, 1892.)

The scores of officers must also be included in the annual troop report (Form 30-*f*) and no amount of firing in previous seasons will excuse an officer from firing, as it will in the case of the rifle or carbine, after the two seasons' course is followed. The targets used are the "A" target (used for dismounted practice) and the "D" and "K" targets (being the figures of men dismounted and mounted *en silhouette*).

The troop is first instructed in the method of handling the revolver *not* loaded, including raising, lowering, returning, loading, (using imaginary cartridges), making ready and firing as prescribed in Cavalry Drill Regulations. Blank cartridges should then be used.

Then further instruction, it is directed, should be given each man by requiring him to fire at a target (like that used for gallery practice at fifty feet), at distances of five and ten yards, a cartridge containing ten grains of powder and a round ball. Then follows the prescribed preliminary firing at the "A" target with the regular service revolver cartridge at the distance of ten, twenty-five and fifty yards, from one to four scores of five shots each being fired at each range, the position being standing, off-hand. Then follows the regular or record practice, consisting of one score of five shots at twenty-five yards, and one score of five shots at fifty yards; ten shots in all. This completes the dismounted practice.

For mounted practice each trooper is required to ride his own horse and, as a preparation for what follows, the troopers are maneuvered by squads in front of the various targets at different gaits; first without and then with blank cartridges, until men and horses become used to the exercise. Then, when men and horses have been sufficiently exercised in this manner, and the trooper can handle his pistol correctly, and the horse becomes accustomed to firing, practice upon the track is begun; the track is elliptical in shape, 200 yards long. The targets are placed on the outside of the track, opposite one of the long sides, the troop is drawn up in line within the track facing the left and front of the targets, if the firing is to be done to the right, or opposite the right and front if the firing is to be to the left. One marker for each target and the scorer take convenient positions within the track.

At first the "D" targets (the silhouette of a man dismounted) are placed, first five and then ten yards from the track; the targets are five in number and twenty yards apart. The troopers are maneuvered in front of them at different gaits, going through the motions of firing. Then the "K" targets (the silhouette of a mounted man) are substituted and the same exercise is repeated. Then the "D" and "K" targets are successively arranged in line of echelon at an angle of forty-five degrees with the track, and the same exercise is repeated. Blank cartridges will then be fired, and the exercise continued until each trooper can fire five cartridges with deliberation and coolness in the time occupied in passing by the target.

During these exercises the interval between troopers is about twenty yards. Ball cartridges are then issued to each man, and the troop is ready for preliminary and regular firing; the amount of preliminary firing is largely discretionary with the troop commander, but it is recommended that each variety of mounted firing be preceded by preliminary instruction. The troopers leave the right of the troop at a walk, each trooper moving out as soon as the preceding trooper has passed the targets and the shot holes have been pasted. In the first exercises with the "D" target, he continues at a walk around the track, but in the subsequent exercises takes up the gallop before reaching the first target and resumes the walk after passing the last target.

Briefly, the record or regular mounted practice consists, (*a*) with the targets "D" arranged at twenty yards apart, five yards from the

track, one circling of the track at a walk for each trooper, firing five shots. This to be repeated five times, the angle of the targets with the track being changed between each time, so that the firing will be from the right, the right front, the right rear, the left and left front—twenty-five shots; (*b*) similar to "*a*," except that the track will be traveled at a gallop—twenty-five shots; (*c*) similar to "*b*," except that the target will be ten yards instead of five yards from the track—twenty-five shots; (*d*) similar to "*c*," except that target "K" will be used—twenty-five shots; (*e*) targets "D" are placed in line of echelon at an angle of forty-five degrees with the track. The first at twenty-five yards from the track; the second target, twenty yards; the third target, fifteen yards; the fourth target, ten yards, and the last target five yards from the track. When repeating the firing from the left, the positions of these targets are reversed, one circling of the track at a gallop to the right and one to the left—ten shots; (*f*) similar to "*e*," except that target "K" is used—ten shots. Total number of shots fired for record, 120. Each hit on target "D" is recorded as one, both direct and ricochet. On target "K," direct and ricochet hits in that portion of the silhouette above a line drawn from the back of the horse to the points of junction of the trooper's arm and the neck of the horse, are scored two; all other hits are scored one.

One report of revolver firing only is made (Form 30–*f*), and this at the close of the season, to the Inspector of S. A. P.

JOHN A. LOCKWOOD,
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NOTE ON MILITARY GEOGRAPHY OF MEXICO.

The leading article of the present number of the JOURNAL, "The Military Geography of Mexico," by Captain WILLIAM A. SHUNK, Eighth U. S. Cavalry, was delivered in the Department of the Military Art as one of a series of lectures prepared for the instruction of the officers in the U. S. Infantry and Cavalry School, Fort Leavenworth, Kansas.

The map accompanying the paper is perhaps the most correct one in existence of the railway communications of Mexico, having been compiled from the latest obtainable data, and with a special view to accuracy. The skill displayed in drawing the map from which the plate was made, reflects great credit upon Second Lieutenant EAVIN L. PHILLIPS, Sixth U. S. Cavalry.

BOOK NOTICES AND EXCHANGES.

THE SERVICE OF SECURITY AND INFORMATION. Captain Arthur L. Wagner, Sixth U. S. Infantry. James J. Chapman, Publisher, Washington, D. C.* Price, $1.50.

This book has recently appeared in answer to a general desire on the part of the officers of the army for a book purely American. The author has applied to the general principles, "the touchstone of American practice in war." To accomplish this result, he submitted the manuscript to Generals Ruger and Merritt, Lieutenant-Colonels Hawkins and Henry, and Majors Hasbrouck, Carr and Babcock. These names alone would insure an excellence never before attained by an American work on this subject.

The author has had great pains taken with the typography, for which all that read the work will be grateful. By giving the definition of the common military terms, the necessity for looking them up is obviated.

The reader will be struck by the impartiality with which the author has treated the conflicting opinions in regard to the service of security and information.

Chapter I. is the introduction. In this chapter is shown the necessity for the service of security and information. Examples are given of the danger of a lack of this knowledge. These examples are taken from foreign wars, and also from our own experiences in Mexico and in the War of the Rebellion. After showing the necessity for this service, the author proceeds to describe the method of carrying it out.

Chapter II. is on the subject of advance guard duties. The necessity for the advance guard is shown, and the reasons for subdividing the column into a main body, an advance guard, a rear guard and flanking parties, are given.

The strength of the advance guard is here determined. It is to be noted that the author emphasizes the fact that circumstances must determine the strength of the advance guard, and "as a general rule (subject, however, to a multitude of exceptions), we may

*To be had of the Secretary U. S. Infantry and Cavalry School, Fort Leavenworth.

assume the strength of the advance guard to be one-sixth of the whole force," thus arriving at the strength ordinarily to be employed. The strong advance guard sometimes employed by the Germans in the Franco-German War, is deprecated. Good reasons, with examples, are given to support the author's position.

The formation of the advance guard is then described. A plate, illustrating this formation, is given—*the author cautioning us not to view such a formation as one always to be used.*

The duties of the commanders of the different subdivisions are clearly explained.

The cavalry advance guards are described. The distances between the subdivisions are given as accepted abroad; the author then says: "It would seem, however, that in our service these distances might be safely reduced; for American cavalry, which can make effective use of dismounted fire action, has greater resisting powers than European cavalry, and it is not limited, as the latter seems generally to be, to a charge to the front or a flight to the rear." The formation of an advance guard of all arms is described.

The power of our cavalry renders the presence of infantry in the advance guard less necessary than in foreign armies. The cavalry, with the assistance of horse artillery, would be able to present the necessary resisting power until the infantry could come up. This is fully shown in the text.

The author then takes up the subject of the formation as modified by the terrain. Every officer in the army should constantly bear in mind, "whether on active service or merely at drill, the commander of an advance guard, outpost, or rear guard, must exercise judgment, and make his dispositions in accordance with the nature of the ground and the real or supposed circumstances of warfare under which he is acting."

What is to be done when the enemy is encountered is shown. The duties and formations of the advance guard of a large body of troops are shown. The use of intrenching tools by the advance guard, is shown by the action of Fitzhugh Lee's cavalry on the Brock Road, and by the First Cavalry Division which held the position of Cold Harbor until the arrival of the Sixth Corps. The composition and duties of the flank guards are explained.

A new feature in the shape of an advance guard drill is given; this will be especially valuable to those who are reading the book without previous knowledge of the methods employed.

Chapter III. is on the subject of outpost duty. In this chapter it is to be noticed that examples are given of the disasters that follow the improper posting of the outposts. This method carries more conviction than would pages of description of how an outpost should be posted. It is very interesting to note that Cossack posts are of American origin.

Chapter IV. is on the subject of reconnaissance. This important subject is fully treated; examples are also given of reconnaissances that have been made. To illustrate the method of entering and reconnoitering a town, a topographical map of the country near Franklin is given, and the proper positions of the subdivisions are shown.

Chapter V. is on the subject of the cavalry screen. This chapter is extremely interesting; it begins with a historical account of the subject, giving illustrations of its use. Its formation and use are clearly described.

Chapter VI. is on the subject of rear guards. The subject is well treated and illustrations are given.

The subject of spies is considered in Appendix I.

Appendix II. is on orientation and map reading. This important subject is briefly treated, but an outline of such a character is given that it makes the work complete; for a more extended treatment of the matter the reader could go to some special work on the subject. Enough is given for all purposes of minor tactics.

Appendix III. gives the method of Indian scouting.

Appendix IV. gives a list of questions on the subject. If an officer finds that he can answer all these questions, he need not fear that he is not well up in the theoretical part of the subject.

A complete index makes the book convenient for reference.

The book is *readable*, and it should be a matter of pride to all officers to have an authorized American work of such excellence on this subject.

GEORGE B. DAVIS,
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THE HAWAIIAN ISLANDS. With Maps and Charts. Military Information Division, War Department, A. G. O., February, 1893.

On account of the great interest aroused by recent events in the Sandwich Islands, the War Department has issued from its Military Information Division, presided over by Major John B. Babcock, Assistant Adjutant-General, U. S. A., for the instruction of army officers and other persons likely to be interested in the subject, a handsome quarto pamphlet containing all the information and statistics obtainable relating to the Hawaiian Islands.

Should it fall to the lot of the U. S. army, or any portion of it, to undertake the invasion or occupation of the land of the Kanakas, the generals charged with the conduct of operations would find in this pamphlet an immense amount of information for their guidance, arranged in convenient form for consultation and use.

The compilation embraces extended information in regard to the physical features of the country, ports of landing, supplies, climate, diseases, railroads, roads, telegraphs, telephonic communications, laws, military forces, characteristics of the inhabitants, industries, etc.

The maps accompanying the report are very large, detailed, and accurate, some of them being reproductions of those in use in the U. S. Navy Department, and others which have been made by order of the Hawaiian Government.

It is to be hoped that the work already so well begun, as shown by this first specimen, may be continued until equally trustworthy reports may be furnished the officers of our Army in regard to every country with which we are liable, at any time, to be brought into conflict, in the extension and protection of our rapidly growing foreign commerce.

The substitution of Hawaiian for Sandwich in the designation of the Islands is to be sincerely regretted, as introducing into our language a word which can be pronounced correctly only with great difficulty by any one except born linguists, and the general use of it by them will savor somewhat of affectation. As to the mass of people who may have to employ the word, they will either mutilate it beyond recognition by eye or ear, be driven to the use of a shocking amount of profanity, or to the substitution for it of some pronounceable English name, as Mark Twain's "Innocents Abroad" did for those Arabic names they encountered in the Holy Land.

DUTIES OF OUTPOSTS WITH MANUAL OF GUARD DUTY, U. S. ARMY. By Lieutenant W. P. Burnham, Sixth U. S. Infantry. Syracuse, N. Y. C. W. Bardeen, publisher. 1893.

In this little volume, well adapted for pocket use, Lieutenant Burnham has combined the entire new manual of guard duty, the duties of outposts, a chapter on flags of truce, and one on signaling.

The compilation has been carefully and accurately made, and, in the hands of the National Guard and the students of colleges having military departments, it will become a very good introduction to the study of the authorized text books on the subjects, other than guard duty, of which it treats.

The chapter on outpost duties is illustrated by numerous diagrams of a very excellent kind and well adapted to their purpose.

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THE TACTICAL USE OF MOUNTED TROOPS IN FUTURE CAMPAIGNS, WITH COMMENTS ON THE RECENT REHABILITATION OF THE LANCE IN EUROPEAN ARMIES.

By First Lieutenant GEORGE W. VAN DEUSEN, First Artillery.

FROM the earliest traditions of the human race down to the present day, its records teem with accounts of wars, and, in the waging of these, the horse has always played a more or less important part. At first, if we may believe tradition, he was not ridden, but attached to a chariot; was used to convey his master swiftly from one part of the field of battle to another, enabling him from the shelter of this chariot to deliver his missiles against his enemies, and ride down the opposing footmen. These charioteers were always the chiefs and most distinguished warriors, which may be considered as one of the first of the many reasons why the mounted arm has always been the one more especially affected by the nobility.

There is no definite record as to the first appearance of cavalry as such, but it was in use as early as 800 B. C., in a comparatively organized form. It is probable that the first to use the horse for this purpose were the tribes in Asia Minor, known as the Scythians, and for hundreds of years the Parthians of that region formed the most

effective irregular cavalry in the world, against which the trained legions of Rome dashed themselves to pieces without avail.

From these tribes this use for the horse spread throughout Asia Minor, and thence to the Grecians, who organized their horsemen and produced troops more like the cavalry of to-day, especially under ALEXANDER THE GREAT, who may be considered the originator of shock tactics and also of mounted infantry.

The Romans were at first very deficient in this arm, and depended almost entirely upon their foot soldiers, and to this fact may be ascribed no little of their lack of success in the early wars against the Carthaginians, whose cavalry was very skillfully handled by HANNIBAL. The Roman horsemen were members of the nobility, and were used for reconnaissance and pursuit but very seldom for a charge, while the contrary was the case with the Carthaginians. After the lessons taught by this war the Romans reörganized their cavalry, and thereafter it formed an important factor in their successes

After the downfall of the Roman Empire came the rise of the Feudal System in Europe and the Age of Chivalry. During this period cavalry was the principal, and it may almost be said, the only arm, the foot soldiers being looked on with contempt as only useful for the horsemen to ride over, and who, if they resisted too long, incurred the displeasure of their own horsemen, who punished them for their insolence in attempting to arrogate to themselves some of the glory of victory. But although such was the state of affairs, the tactical employment of cavalry was entirely different from what we now understand by that term, and, in fact, it may be said, there was no tactical employment. Battles were almost entirely determined by individual combats between the different knights, supported by their retainers. There was no cohesion in the armies and very little attempt at discipline. The armor in many cases became so heavy that a knight unhorsed, was completely *hors du combat*, since he could not rise without the assistance of his retainers. The same state of affairs continued during the crusades, and the horsemen were even depended upon for the attack of walled towns, although the reappearance of infantry was foreshadowed by the fact that in several cases the knights were compelled to dismount and plant their lances in front of them like pikes in order to resist the onslaughts of SALADIN'S light horsemen. During this period Europe was several times invaded by hordes of Asiatics, all of whom were mounted, but who fought in an irregular manner like the ancient Parthians.

After the Crusades commenced the decay of feudalism, and the centralization of power in the monarch. To maintain his authority

against the more powerful vassals it became necessary for the monarch to maintain a force of mercenaries under his control. These were, at first, generally soldiers of fortune, mounted, many of them knights and gentlemen, who took service under the prince who would pay best for their services, and these bands may be considered as the origin of the European standing armies of the present day. Heavy armor was still used, and the casualties in battle were not very great, as may be imagined from an instance given by MACHIAVELLI of a great defeat in 1423, famous throughout all Italy, in which the only deaths that occurred were those of three men who fell from their horses into a morass and were drowned, presumably on account of the weight of their armor.

Although these bands of irregular mercenaries which formed the nuclei of the standing armies of to-day could not be very completely organized and disciplined, yet as the central power increased, the monarchs were enabled to gradually do away with troops of this class, and depend more and more upon their own subjects; and thus the cavalry came more and more to assume its present shape, this change being hastened by the increasing importance of infantry, as first illustrated at Crecy, Morgarten and Sempach by the English archers and Swiss pikemen. The experiences of these battles had shown very conclusively that the day of winning combats by the individual prowess of knights was about over, and that cavalry in order to preserve its usefulness must consent to be placed in some regular formation, which would enable its commander to use it tactically on the battle-field. And this fact was emphasized by the increasing value of gunpowder, although it was many years after its introduction ere the weapons for its use were so improved that they could replace all other missile weapons, and produce a greater effect than the English arrow in penetrating armor.

After fire-arms had fully demonstrated their value, the cavalry became imbued with the idea that they should depend chiefly upon arms similar to those used against them. Consequently from about 1500 until the time of FREDERICK THE GREAT, nearly all of the European cavalry abandoned the charge at high speed, and advanced to the attack slowly, seldom more rapidly than the trot, firing their carbines and pistols as they advanced. The custom was also introduced of mingling small bodies of infantry with the cavalry when advancing to the attack, thus greatly decreasing the mobility of the latter. It can hardly be open to doubt that the form of attack in use at this period is the one least suited for cavalry, and the one which would be the most easily repulsed by the fire of good infantry,

and such was generally found to be the case. Exceptions to this manner of using cavalry were shown in the cases of CHARLES XII and GUSTAVUS ADOLPHUS of Sweden, and Marshal SAXE of France, all of whom advocated the use of the charge at high speed, and who were generally successful in such charges.

The examples of these illustrious leaders were not lost upon FREDERICK THE GREAT, and with the assistance of his great generals, SEIDLITZ, ZIETHEN and DRIESEN, he created what was, in many ways, the most efficient body of cavalry ever known. He prohibited firing mounted, charged at a very rapid gait in several lines, caused his troops to depend entirely upon the *arme blanche* and the shock, and originated horse artillery as an auxiliary arm for use with the cavalry. Under these conditions and leaders the Prussian cavalry achieved the most brilliant results against the lighter cavalry and infantry of their opponents, and in many cases decided the fate of the battle. Consequently, from this time until the French Revolution, the Prussian system was copied with almost ridiculous exactness throughout all Europe as the height of perfection for cavalry. Nevertheless, there was one particular in which the Austrian cavalry was far superior to that of FREDERICK, and that was for purposes of reconnaissance and information, and this fact often placed the Prussian army in rather unpleasant situations, from which all the military genius of FREDERICK was required to extricate it. This same defect was continued in Europe, as Austria at once dropped her own system and copied that of Prussia, until the time of NAPOLEON, who first seemed to understand how to utilize cavalry in all its forms. Although the French cavalry at the beginning of the Revolution was of a very inferior quality, and probably never did become fully equal to that of some nations at the same period, yet so well did NAPOLEON know how to make the best use of it that not only did it perform the most effective service as a reconnoitering and screening force, but it was a most potent factor on the field of battle under such leaders as MURAT, KELLERMANN and LASALLE. The pursuit of the Prussian army after Jena by MURAT and his cavalry is one of the most remarkable instances ever seen of what can be accomplished by such troops properly handled.

During the latter part of the NAPOLEONIC era, another element was introduced into the history of mounted troops by the achievements of the irregular cavalry of Russia, the Cossacks. To these troops, possibly, as much as to any other direct cause, may be ascribed the final downfall of the Emperor. Fighting at first in a most irregular, almost disorderly, manner, as they became more experienced in civilized warfare they gradually acquired a more regular formation, and at the end were able to perform most of the duties of regular cavalry with a great superiority in mobility.

From the battle of Waterloo until the adoption of rifled fire-arms, there were very few essential changes in the formations of the mounted troops in Europe, most of them retaining the ideas in vogue at the former epoch. But when the increased range and accuracy of the new arms became generally known, there set in a reaction against cavalry which resulted in a reduction of the mounted forces in many of the European nations. So firmly had the principles of the great FREDERICK become fixed throughout Europe that it did not seem to be imagined that cavalry could act in any other manner than by the shock and with the *arme blanche*, and that by arming it with the improved fire-arms it could be rendered fully as effective in many respects as formerly, and possibly more so. It remained for our Civil War to demonstrate what could be done by mounted troops when properly armed and handled. The cavalry of that war was found equal to any task imposed upon it, whether charging at full speed with the saber or revolver, or, dismounted as infantry, defending and attacking positions with the carbine. But these facts were not properly appreciated in Europe, and so, in the "Seven Weeks' War," we find the cavalry playing a very minor part, being generally kept in rear, and not even efficient in reconnaissance duties. But the lessons of this War of 1866 were not lost upon the Prussians, and at the opening of the War of 1870 we find them with a force of cavalry inestimably superior for practical work to that of their opponents, and this fact was to prove a very marked element in the succession of victories which crowned the Prussian arms.

Since the close of that war, and especially during the past few years, there has been a decided reaction in Europe in favor of the mounted arm, and most of the nations are now engaged, to a greater or less extent, in remodeling and improving that component of their armies.

Having thus very briefly sketched the history of cavalry down to the present day, let us enter into a few of the considerations which play a part in its use in the future.

It is probable that during recent years no military subject has been more profusely discussed in current service literature, both at home and abroad, than the function to be performed by mounted troops in the wars of the future. Into this discussion have entered men of all arms and of all opinions; from the enthusiastic cavalryman of the old school, who looks back to the days of SEIDLITZ and

ZIETHEN, and indulges in dreams of dashing charges in which his troops, armed only with the *arme blanche*, ride down and disperse all foes, to the equally enthusiastic infantryman, who considers that all cavalry will soon be nothing more or less than mounted infantry, using their horses simply as a speedy and convenient mode of transportation from one point to another. Between these two extremes are men of all shades of opinion; sometimes inclining to one point of view, sometimes to the other.

Deductions regarding the future can be drawn only from the lessons of the wars of the past, coupled, of course, with the necessary considerations caused by modern progress in arms, ammunition and material. But the results in the past have been so widely divergent in character that each disputant finds in them material for upholding his own views, and very often condemning as meretricious those of his opponents. The question will probably never be decided to the entire satisfaction of either side, not even by the next great war, since whatever the results every disputant, especially if a theoretical one, will find plenty of authority of some kind for supporting his own especial theories.

And the subject may at present be looked upon as presenting the best possible ground for theories. Although all European nations, and our own as well, are reörganizing their cavalries and drilling them according to new tactics and regulations, yet these regulations have not the positiveness of those for infantry, and there is a view of "if" running through many parts of them which cannot well be avoided. It is difficult to fix with exactness the extent to which the use of mounted troops will be carried in certain directions, and this difficulty is somewhat increased by doubt as to the exact tactical formations for attack, which will be adopted by the infantry against which they may be called upon to operate.

However much discussion there may be in other directions, there is one branch of the mounted service on the usefulness of which all authorities and nations are in accord, and that is the horse artillery. Originally organized as such by FREDERICK THE GREAT, it has gradually increased in importance since his day, until at present, a cavalry division starting out on independent duty would almost as soon think of leaving behind its horses as its artillery. When the division is with the rest of the army, as during a battle, its artillery may, and probably will, be used to strengthen the artillery of the army, but should always be at the service of the cavalry when needed.

Although for a long time the majority of foreign military critics were inclined to look with disdain upon the operations of cavalry in our Civil War, and in many cases considered that we had no troops that could be called cavalry in their understanding of the term, yet as the years have gone by they have gradually been coming to the conclusion that many things were accomplished by those same despised troops which might be studied with advantage, especially when taken in connection with the lessons taught by the Wars of 1866 and 1870. Nevertheless after the close of our war, the volunteer cavalry was mustered out, and the few regiments of regulars were broken up into police detachments for guarding the frontier against Indian outbreaks, operating generally by themselves and in small commands of from one to six troops. The occasions on which an entire regiment could be assembled for field duty or maneuver have been extremely rare; consequently, although our cavalry officers are sounder theorists on the subject of their arm than, possibly, any other in the world, it is to the continental nations of Europe, with their immense standing armies and continual preparation for war, that we must turn to see practical steps being taken for the future utilization of cavalry in large masses.

Although England takes great pride in her mounted troops and their deeds in the past, and of late years has had some few maneuvers, especially in India, in which comparatively large forces of cavalry have been used, yet the size and distribution of her army, system of recruitment, etc., are in many respects too similar to our own to render their study fruitful in the information desired; and the eye naturally turns to France and Germany as the two great nations which have, in recent years, been through the most bitter experiences of war; since the Russo-Turkish War may practically be left out of the question in so far as cavalry is concerned, and this more especially because the steps of these two nations in the reörganization of their armies on the basis of the lessons learned in that war, and in the anticipation of a renewal of that war in the future, have been followed to a greater or less extent by most of the other nations of Europe. This has been more particularly the case with regard to the victor, and for some time it seemed to be considered that everything German was bound to be the best and must be followed, even to the German helmet.

The general organization of the cavalry of to-day is probably very similar in general character to what it will be for some years to come, in fact until some war shall indicate the changes to be made and defects corrected. Of course there will be minor changes, due to alterations in arms and equipments, but the principles will remain the same.

There are now two general systems in use in Europe, the difference being that in one divisional cavalry is employed and in the other it is not. There has been considerable discussion as to the advisability of the former method, and there is some little doubt as to its being the best even among those who continue to use it. Its opponents claim that by dividing up the cavalry into such small masses, say a regiment to a division of infantry, it is not numerous enough to be used to advantage; it is often in the way of the infantry on the march; its services for reconnaissance and screening will always be more efficiently performed by the independent cavalry of the army, and that the cavalry in the independent divisions are apt to look down upon the divisional cavalry, and thus cause bad feeling to arise between the two. One argument urged in its favor is that the infantry division may be called upon to act as an independent unit, and in that case should be made up of all three arms. But even in that case it would certainly be very easy to attach cavalry for the occasion from one of the cavalry divisions under the control of the corps or army commander.

But there is no doubt that it will very often be convenient for the division commander to have a small number of mounted men under his direct orders for use as escorts, patrols, messengers, etc., and they will, sheltered near the line during a battle, often find opportunities for being useful that would not occur to the large masses of cavalry, and they may often materially assist the other arms. For these reasons a large number of European nations still retain their divisional cavalry, though the amount, especially with the Germans, has been considerably reduced during the past few years, and it has even been proposed to relegate this duty to the Landwehr cavalry.

It is now universally conceded that the division is the largest tactical unit for mounted troops that can well be handled by one commander, and that the days of corps of cavalry are past. As to the size of these units, DERRÉCAGAIX, reasoning on the principle that there should be three different units within the unit, one for attack or shock, one for support and one for reserve, holds that the division should be composed of three brigades each of two regiments, and that each brigade should have a battery of horse artillery. This composition would seem to be a very reasonable one, not only for the attack but for the other duties required of the division when acting independently. For instance, if it should be necessary to detach a certain portion of the division for advanced or other duty, a brigade could be sent, giving a detachment of considerable size and

complete organization, and the organization of the main body would not be seriously disturbed.

In this connection it may not be out of place to glance at the systems of the different European nations. In the first class, those employing divisional cavalry, come Germany, Austria, Italy and England.

Germany, up to a very recent date, has attached one cavalry regiment of four squadrons to each infantry division. An article in the May number of *Harper's Monthly* of this year states that at present each infantry division consists of two brigades of infantry and one brigade of cavalry. But in view of the statements that have been so generally made, that Germany is reducing her divisional cavalry, it would seem that the above statement must be an error, or possibly the cavalry mentioned may be attached to the division only during peace, and that, in case of war, these brigades would be consolidated into the cavalry divisions. The cavalry divisions, as a rule, consist of three brigades, of two regiments each, and two or three batteries. The cavalry division of the Guard has four brigades.

In Austria the divisional cavalry consists of only two squadrons for each infantry division. The cavalry division consists of two brigades, of two regiments each, two battalions of infantry and one battery of artillery.

Italy has two squadrons to each infantry division. There are no cavalry divisions, but one brigade of two regiments is attached to each army corps.

England has one regiment of cavalry to each infantry division. As in Italy, there are no cavalry divisions, but each army corps has a brigade of three regiments.

In the second class come France and Russia, neither of which has divisional cavalry.

In France the normal type of the cavalry division consists of three brigades, of two regiments each, and two batteries.

In Russia the size of the division is variable, one being attached to each of the army corps. The two divisions of the Guard have each three brigades, while those of the line and the Caucasus have only two.

The foregoing represents, as nearly as can be ascertained from the information at hand, the general tactical organization at present of the cavalry in those nations which are maintaining large standing armies, each of which is constantly striving to make its own estab-

lishment fully as good as those of its neighbors, and if possible, a little better.

In the United States the new drill regulations recently issued provide for both divisional cavalry and cavalry divisions, and also for cavalry corps, and even larger bodies. The divisional cavalry would consist of one or more regiments attached to each army corps, from which a squadron or less would be detailed when necessary, to report to the division commander for duty. This would seem to resemble more the corps brigade of cavalry of the British army than what is known as divisional cavalry abroad. The cavalry division is to consist of three brigades of three regiments each, and two or more batteries of artillery. The corps is to consist of three divisions. It can hardly be imagined that a body of cavalry of the size of a corps would ever be assembled under one commander, even for the most extensive raid that could be planned. Allowing a strength of 100 men to a troop or 1200 to a regiment we would have a corps of 35,000 horsemen, besides the accompanying artillery, trains, etc., which would be rather an unwieldly mass to be handled in a proper manner.

Before passing to the consideration of the functions to be performed by the mounted troops in the campaign, it may be appropriate to devote a few words to the much discussed question as to the arms to be used by them, especially as regards the subject of fire-arms.

The cavalryman who upholds the traditions of the old school, and there are many of them abroad as well as some at home, looks with great suspicion on any attempt to arm his service in such a manner as would seem to assimilate its action with that of the infantry, and thus render it liable to be subjected to the—to him—opprobrious epithet of "mounted infantry." He would have the cavalry trained to act as such and not to do any portion of its fighting on foot, leaving such work to the mounted infantry proper. At the other extreme is, as we have mentioned before, the one who considers the days of cavalry, as such, over, and that in the future they must throw away the sword and depend upon the rifle. But it would seem that a mean between these views will more nearly represent the truth of the matter than either alone. The advocate of the first must remember, when he refers to the cavalry of the great FREDERICK, that he did not prohibit his cavalry fighting on foot, and in fact, encouraged it in many cases. What he did forbid was the firing of their carbines from the horses' backs during the charge, a most uncertain method of firing, and one which caused disorder in the ranks and took away much of the moral effect of the movement.

Yet it can hardly be believed that the day of the sword is entirely past, and that many opportunities for its use will not occur in the future, not only against the cavalry but even against infantry.

During our Civil War there was created a body of cavalry which, in this country, we consider the finest for practical use that has ever been in existence. And it may safely be said that this opinion is to-day shared by many prominent military authorities abroad. Although it was at first regarded with contempt and considered not to be cavalry at all, yet it did combine, in the highest degree, the attributes which must be possessed by successful mounted troops in future wars. That this fact is recognized abroad is shown by the fact that their cavalry of to-day is becoming more and more as was ours at the close of the war, when it was ready to either dismount and hold a position against infantry or engage in a dashing saber charge against cavalry.

In our opinion the ideal cavalryman of the future should be able to maintain himself under all circumstances, and if necessary, operate with perfect independence of the other arms, excepting, of course, its own horse artillery. Armed with a saber, long-range repeating carbine or light rifle and revolver, he will be equally prepared for a charge on the battle-field or for holding his own on reconnaissance duty, even against infantry. As for the need of heavy and light cavalry, the former for the charge and the latter for the work of security, it is hard to see the necessity for the distinction. When charging is to be done it is not likely to be against masses, where the weight of the horse will tell as much as formerly, but against scattered men, in which agility will be likely to count more than weight.

It is not probable that there will be seen in the future any example similar to that of the Prussian Uhlans in 1870, who, without long-range fire-arms, were held in check by small squads of irregular Franctireurs armed with the Chassepot, and could do nothing until they had picked up enough of the Chassepots from the enemy to arm themselves.

In our army, since the Civil War, the cavalry service has been entirely on the frontier, and in starting on campaigns the saber has generally been left in garrison, and the sole dependence placed upon fire-arms. But this has been due to the peculiar nature of the warfare in which we have been engaged, and not to any distrust of the cavalry officers in the saber as a weapon in its proper place, and we think very few of them would consent to the abandonment of the saber as part of the cavalry armament. But there is no reason for

its abandonment, as a mounted man will not be overburdened by carrying all three of the weapons above mentioned, and the cavalry thus armed will possess the requisites for cavalry action of all kinds, strength and mobility. In this connection we would say that hardly a worse arrangement can be imagined than the Austrian, in which each cavalry division is accompanied by two battalions of infantry.

As to the objection raised against cavalry fighting on foot, that it will be able to throw only a small portion of its strength on the fighting line, this would seem to be rather overestimated in Europe. According to our drill regulations every fourth man is a horse-holder, which would give about three-fourths for the first strength of the dismounted line. And it would seem practicable, since the horse-holders will remain some distance in rear of the line under shelter, if possible, for one man to hold a greater number of horses than indicated, taking eight or even ten in an emergency, and giving that many more combatants. Such troops may be called mounted infantry by their opponents if it please them so to do, but they will be, nevertheless, cavalry, and cavalry of the best type.

Let us now consider very briefly the services to be performed by cavalry armed according to our theory, from the declaration of war up to the end of the struggle.

The cavalry will be called upon from the very commencement, and its duties will begin during the mobilization and concentration of the armies upon the frontier. Both nations will probably keep large forces of cavalry, under a permanent organization and on a war footing, near the frontier and in the closest possible proximity to those points which offer the most strategic advantages for the concentration of the enemy. Upon the declaration of war it will devolve upon these troops to cover the concentration of their own armies and at the same time do all in their power to hinder that of the enemy. As both opponents will be actuated by the same ideas, it is probable that the next war will be inaugurated by a series of cavalry combats, some, probably, between bodies of considerable size. In this concentration time is a very important element, in which days and even hours must be considered. Hence, if one cavalry commander can elude or drive back his adversary, he may be able to execute a raid into the hostile territory which may do no little damage and cause some considerable delay in the transportation service. A few important railroad bridges burned at some distance from the frontier, depots destroyed and track torn up, as was done by the cavalry during the raids in our war, might be the means of giving a great advantage to the side of the successful cavalry.

The raids at this stage should be very limited in extent, as the cavalry ought not to be allowed to get too far away from the main army until it is completely concentrated and ready for action. The information obtained during these preliminary operations will be of the greatest use to the commander of the army in determining upon his plan of campaign. It is upon his cavalry at this time that he must chiefly depend for details as to the number and state of concentration of the enemy, their situation, probable movements, etc. Hence, would seem to arise the necessity for having the cavalry, during peace, kept in a more complete state of drill and instruction than the other arms, so that it may be ready for service upon the shortest possible notice. Especially should the officers be made thoroughly conversant with the duties that will be required of them, and be trained in that quickness of perception and ability to grasp details, without which they will fail to reach the high standard of efficiency necessary for such important services.

After one army has assumed the initiative and crossed the frontier, thus opening the campaign, the duties of the cavalry become more and more important up to the actual contest on the battle-field. This "service of security," or of reconnaissance and screening, is considered by many to be the one use for cavalry in the future, and that it might just as well be kept away from the battle-field except in so far as it will render there the same services as on the march.

The function of the cavalry of both armies is practically the same, to screen its own troops and protect them from surprise, and to obtain all possible information as to the movements of the enemy; consequently it should be far enough in advance of the main army to give it time to concentrate if threatened with attack, and should be so armed and in such force that it can hold positions against the enemy or, if need be, capture those not held by too great a force. It is for this purpose that the need of a good fire-arm becomes evident.

It has been the rule in many cases that cavalry under such circumstances should be supported by infantry. But mobility is one of the chief advantages of the mounted arm, and how much would this be injured if every time it met with even a trifling resistance, as occurred frequently in 1870–71, it was compelled to delay until the supporting infantry could come up to its assistance.

These reconnoitering and screening details for the main army are performed by the cavalry divisions, which should be thrown out in advance of the army at least one day's march, and more, if possible, and the importance of this in adding to the comfort and safety of the other troops cannot be overestimated. Knowing that the sur-

rounding country for a long distance in advance has been thoroughly scoured by their cavalry and that it would be impossible for any considerable body of the enemy to be within striking distance, the men can march in comfort by day and sleep in peace at night, preserving their strength and morale for the crowning effort — the battle. An army in which such a condition of affairs exists has already advanced a long step towards victory when opposed by an enemy moving under contrary circumstances.

The cavalry division thus on duty in advance of the army, should keep the larger part of its force in one main body, and should cover the country in all directions for at least half a day's march in front of this body, with detachments and patrols of all kinds. The main object is to gather in all information regarding the enemy, and not let any possible opportunity for so doing escape. Officers' patrols would be used when especially important information was to be obtained. In ordinary cases a patrol under a non-commissioned officer would be sufficient, the men being selected for fitness for such duty.

During all movements of the army the mounted troops will, in addition to the reconnoitering service, form an important part of the composition of advance and rear guards. In fact, with cavalry properly trained to fight on foot, it would seem as if the greater part of the duties of advance guards, which are especially arduous and fatiguing for foot troops, could be performed fully as well, and even better, by the mounted troops. The main object of the advance guard is to protect the army from any possibility of surprise, which requires a thorough reconnaissance of the country in front and on the flanks, and this can be done more quickly by mounted troops. Of course with cavalry of the old school this would not hold true, as the advance guard may often be compelled to maintain a position against infantry attack, and that would be impossible with the lance or saber, or even with a short range carbine. But to-day the conditions are different, and furthermore, the advance guard should never be called upon to unexpectedly withstand a serious attack if the reconnoitering cavalry in advance has properly performed its functions.

It may happen that even at this early stage of the operations it will prove advantageous to attempt those incursions into the enemy's country which were so largely used in our war, and so little in Europe, called raids, although it is probable that they will have more chance of success later in the war, when both the armies and the country supporting them have become demoralized to a certain degree. European writers, as a rule, though recognizing the great

results obtained by the cavalry leaders on both sides during our war in their numerous raids through the enemy's country, maintain that the conditions existing in Europe are so different from those under which our mounted troops operated that it will not be possible for such raids to be used to any great extent in their wars of the future. This may be true when we take into consideration their views as to the use of cavalry. But we cannot help believing there were many opportunities on both sides in the Wars of 1866 and 1870 of which our leaders would have taken advantage, and inflicted almost incalculable damage upon the enemy. If the Prussian Uhlans with their lances were allowed to ride freely over a large portion of France during the first stages of the war, especially as it was shown later how easily they could be stopped by a few irregular troops, what could not have been done by a force of ten or fifteen thousand efficient cavalrymen, armed after our model, and led by a FORREST, MORGAN, WILSON or GRIERSON! And how much damage could not the French have done later in the war under such leaders against the long lines of the German communications!

The same also holds true of Prussia and Austria in the Seven Weeks' War. And if these opportunities have occurred in the past, and there is no doubt to us that they have, they are just as likely to be repeated in the future, and will accrue to the advantage of the nation which has foreseen them and possesses the leaders and troops capable of rising to the occasion.

One of the principal arguments against them seems to be that in our war the raids were made through a comparatively thinly inhabited country with few roads, and that in Europe they would be made through a country thick with a hostile population, and open, with many roads by which the raiders might be intercepted by troops sent against them. But it is hardly possible that such a force as has been indicated would be much delayed by the unorganized efforts of a population consisting, as it would at that period, largely of non-combatants, while the large number of roads might operate fully as much in their favor as against them, since they would afford so many more outlets for eluding pursuit.

It is probable that, at the present day, only a short time will elapse from the opening of the campaign until the first battle. Both armies will be advancing to the conflict or one will be advancing and the other awaiting its coming in some chosen position. As the armies approach each other their respective advanced cavalries are gradually concentrated and drawn in towards the main armies. Every effort is made by each of them up to the very day of battle,

to keep in the most intimate contact with the enemy, gain all possible information as to his dispositions, strength and intentions, while at the same time screening the front of its own army as thoroughly as possible from all attempts of the opposing cavalry to gain like information. When the critical moment comes and the battle is a thing of immediate certainty, the cavalry should be withdrawn from the front and placed in favorable positions on the flanks and in rear, where it will be able to take advantage of every possible opportunity to make itself useful during the conflict.

That the importance of the foregoing duties of mounted troops has not been fully recognized in the past by European nations, is very decidedly shown by a study of the latest wars, even the Russo-Turkish War in 1877–78. In the Seven Weeks' War the service of reconnaissance was wretchedly performed on both sides, and afforded their respective commanders very little useful information. How absurd seems to us to-day the state of affairs just before the battle of Königgrätz when the First Prussian Army was within three and one-quarter miles of the Austrians and did not know it. The Prussians profited by their experience in this war in this respect, so that the beginning of the War of 1870 found their service, though still far from perfect, so much superior to that of the French that it seemed perfect by comparison.

To-day there may be said to be no difference of opinion among civilized nations as to the great importance of these duties of mounted troops. But the same cannot be said of their employment on the field of battle, and it is regarding this point that most of the controversy of the past years has been excited. After the successful introduction of breech-loading arms it became the popular opinion that the days of usefulness of the cavalry on the battle-field as an offensive arm were over. This view obtained to a great extent even after the War of 1870; but in the last few years there has been a great revival, especially in Germany, in favor of the cavalry, and extremists now consider that its services on the field of battle in the future will be even greater than in the palmiest days of the past. With this view we cannot agree, and it would seem that the use of cavalry, acting on the field of battle with the other arms, will always be secondary to its duties before and after the combat; but, this much admitted, there will still be found many occasions in the actual conflict where cavalry can make itself most decidedly useful, and may even exert an important influence on the result, although the days are past when the battle can be won by the onslaught of the mounted brigades.

The old adage that cavalry cannot charge unshaken infantry, has been emphasized by the adoption of the magazine breech-loader and possibly by smokeless powder. But it is not often necessary for cavalry to charge *unshaken* infantry, and, in fact, it would not be used under such conditions except in very extraordinary cases. However, infantry cannot always remain unshaken, and when it has been subjected to the fire of artillery and infantry for a long time, possibly for hours, it may well become disorganized and in a condition of nervous strain in which such an influence as a charge of cavalry on the flank or even in front would produce a decided effect and cause such a panic that, for the time, it would not make the slightest difference whether they were armed with magazine rifles, muzzle loaders or even clubs. Such a charge, promptly supported by the infantry, might prove the turning point of the battle.

The fact of increased rapidity of fire does not necessarily imply increased accuracy, and it is a well known fact that men in the excitement of action are much more likely to waste their fire than when required to use more deliberation and load more slowly. It certainly does not seem to be a fair test to take the hits made by a skirmish line on the drill ground, and infer from this result that it would be a physical impossibility for cavalry charging on this line to ever reach it. In Von Bredow's celebrated charge at Vionville, made against victorious infantry armed with the Chassepot rifle, only about fifty horses and men went down before the infantry fire in the 1500 paces charged over before reaching the enemy's line.

In comparing the rapidity of fire of the breech-loader with that of the old muzzle-loader, it should not be forgotten that the breech-loader will be in the hands of a thin line of men, while in the old days the opposing infantry was in a mass of several ranks, so that the discrepancy in the amount of fire during the short time occupied by the cavalry in the charge is not so great as it might at first seem. Of course it *is* very much in favor of the breech-loader, and this is increased by its much greater range and the consequent increased length of time during which the cavalry must be subjected to its fire. To counterbalance this as much as possible the cavalry should take all possible advantage of cover, and not expose itself until it becomes absolutely necessary. And recent maneuvers in Europe have shown that there are frequently in a battle-field certain undulations of ground, by the use of which the cavalry can, during the excitement of the frontal combat, gain unperceived a position within easy striking distance of some portion of the enemy's line, very possibly on

the flank, which might place some of the artillery of the enemy in a very critical position.

The recent reduction of the caliber of the military rifle in most nations seems to work to the advantage of the cavalry in action. The effect of the charge is, to a certain extent, produced by the shock caused by the weight of the horse being thrown against the enemy at a high rate of speed. So long as he can sit on a horse the cavalryman, after he is wounded, can be of much more use than a wounded infantryman; hence in order to break the effect of a charge it is important to stop the horses. As is well known, this is difficult to do even with the larger caliber bullet, unless some important bone is shattered or the wound made in an immediately vital part. This difficulty will be much increased with the small bullet which, as experiments have shown, may perforate a bone without causing a fracture, and which will, under any circumstances, communicate much less of a shock to the horse and rider.

On the battle-field, as has been before stated, the cavalry should be kept as well covered as possible until the time has come for its use. It is generally placed on the flanks where it can discover and resist any turning efforts on the part of the cavalry or infantry of the enemy, and a portion might also be placed in rear of the center, to act as a sort of reserve, which could be quickly thrown into broken places in the line to hold them until infantry could come up. During the entire battle it must keep up the service of information, and strive to keep the commander informed as far as possible regarding the movements of the enemy. It is probably upon the flanks that it will be called on to meet the opposing cavalry, and that there will take place the cavalry combats of the battle. During these charges and counter charges the cavalry should confine itself to the "*arme blanche*," since it certainly cannot *stop* to fire, and firing mounted under such circumstances is to be avoided. Although it was at one time reported, and is so quoted by DENISON, that in the War of 1870 the Germans lost only six killed and 212 wounded by the saber, yet official returns show that their loss was 1163 killed and wounded by the lance and saber. As they were victorious in nearly every charge made against the French cavalry, the losses of the latter by the same weapons must have been much greater. And the effect of a cavalry charge does not depend so much upon the actual loss inflicted as on the demoralizing influence of a sudden onslaught upon broken infantry, who have possibly almost or wholly exhausted their ammunition.

Before closing this discussion of the field of battle, one very important duty which may be required from the cavalry should be mentioned, that of sacrificing itself at some critical moment, to delay the progress of a victorious enemy until fresh troops can be brought up, or to cover the retreat of the defeated army. Such was the action of the Austrian cavalry after the battle of Königgrätz, and there were several similar instances in 1870, the best known of which is VON BREDOW'S celebrated charge at Vionville. Under much the same head would come the charges of the Austrian cavalry at Custozza, by which 2400 horsemen held in check and kept from the field of battle all day two divisions of Italian infantry, numbering over 25,000. It is true that such charges may result in the practical annihilation of the cavalry, and so should be undertaken only as a last resort. But if the object aimed at is accomplished, it must be accounted just as much a victory for the cavalry as it was in the old days, when they rode down the squares of infantry and drove them from the field.

From the above considerations it would seem that although the days of great offensive charges, by which the cavalry prepared the way for the other arms and decided the fate of the combat, may be said to be past, it is still far from being a useless factor on the field of battle, and when handled understandingly, may exercise no little influence on the fate of the day.

It is probable that in the great battles of the future the result will not be decided until very late in the day, even after nightfall, and the successful army will be too much demoralized and disorganized to at once commence the pursuit. During the night the defeated army will withdraw in the best order possible, and will endeavor by all means in its power to deceive the enemy as to the actual direction and objective of its retreat. It is at this time that the cavalry of the victorious army should come promptly to the front, get into contact with the retreating enemy, and maintain it at all hazards. To attain this end a certain portion of the cavalry should be kept in reserve on the battle-field, so that it will be fresh and in good condition for this duty, and care should be taken that it is not used for other purposes. The object of the commander of the victorious army will be to follow the enemy and strike him again as soon as possible. In order to do this he must know the direction of his retreat, his state of organization, and his probable point of concentration. This information can be furnished him by a vigorous and efficient cavalry service only. Light columns of mounted troops should also be sent out to endeavor to seize in advance of the retir-

ing columns important defiles and positions which are essential to their retreat.

These duties for the pursuing cavalry suggest in themselves those which will fall to the corresponding troops of the retreating army. They must endeavor in every possible way to deceive the pursuer regarding the facts he wishes to discover, and form such a screen about their army that the enemy will find great difficulty in penetrating it.

In the foregoing remarks we have endeavored to mention briefly a very few of what seem the most important functions of cavalry, without attempting to go into any detailed discussion. The subject would become a very voluminous one, far beyond the scope of a paper of this character, should any attempt be made to enter into the consideration of the various theories advanced, formations recommended, etc., all of which have already been very thoroughly taken up and discussed from every point of view.

We are inclined to regard with interest any step taken by Germany in a military direction, and even though it may not agree with our preconceived idea of what is best, yet we feel that the change and the reasons leading thereto are worthy of careful consideration. Germany has had so much practical experience in war during the past thirty years that it is safe to presume that any step taken is the result of mature deliberation, founded on the lessons of the past and probabilities for the future. Such a step is that which has recently resulted in the armament of the entire German army with the lance, and which precedent has been followed to a greater or less extent by nearly all the nations of Europe.

Our experience with that weapon as an arm for mounted troops has been very limited in extent, and such as we have undergone has not been very much in its favor. During the Mexican War the lancers of that country were objects of ridicule to our troops, and although this may have been as much due to the character of the troops as to the weapon with which they were armed, yet the stigma was attached as well to the weapon as to the man who carried it.

At the beginning of our Civil War a few regiments of lancers were organized among the volunteer cavalry, attracted, doubtless, by the showy nature of the weapon, but it was soon abandoned owing to their awkwardness with it and the ridicule bestowed upon them, and they were well contented to assume the regulation cavalry armament. As an illustration of the absurdity of arming raw troops with this weapon may be instanced the case of a regiment of New York lancers, about four-fifths of whose men were unhorsed in riding

through a narrow strip of woods, because of their inability to carry their lances in the proper manner.

The conditions of our cavalry service both before and since the war have been such that the troops have been obliged to depend chiefly upon their fire action, and have not, therefore, been favorable for the adoption, or even trial, of a weapon which, like the lance, is useful only for shock action, and, in the opinion of many, not very useful even for that. But, in spite of our limited practical experience with it, and possibly for that very reason, we, on this side of the Atlantic, can examine the facts for and against this weapon and form a comparatively unprejudiced opinion as to its merits. And this is the more true from the fact that we are not likely to be moved by two or three things which, trivial though they seem, may possibly have some weight in influencing the nations of the Old World in the step they have taken in this matter.

First, the lance has always been looked upon in Europe as the weapon of knighthood and chivalry, and it has come down from the Middle Ages surrounded by the glamour and romance connected with the history of the great deeds which have been performed by its assistance. And what more natural than that the descendants of those old knights should desire to emulate the deeds of their ancestors with troops armed with similar weapons.

Then, again, in foreign nations much more attention is paid to the "pomp and circumstance of glorious war" than in this practical money-making republic, and it would be hard to find a more gallant and inspiring sight than a regiment of lancers with lances raised and pennons fluttering in the breeze. Nothing could appeal more strongly to the popular mind, which would not stop to consider how very serviceable these same pennons might be in indicating to the enemy the whereabouts of this same cavalry.

Again, such has been the tendency to copy Germany that when, for some reasons of her own, she decided to adopt the lance, many of the other nations, and especially France, felt called upon to follow in her footsteps, and some of their military writers at once commenced to devote all their energies to proving that the lance is the queen of weapons, and that no cavalry can be of use in the future without it.

As first used by mounted troops before the days of Greece and Rome, the lance was much shorter than now and intended more for a missile weapon than to be retained in the hand of the horseman. It was thus used among the more savage tribes until quite a recent date. It was used in various forms by the Greeks, Romans and

other contemporaneous nations, and reached its highest tide during the days of chivalry, when it was the chief weapon of the knights and its use was forbidden to the common herd. Battles were very often little more than a series of combats between opposing knights, each endeavoring to unhorse his opponent. It was the weapon of the tourney and the battle-field, of love and of war, and the romance of those days still clings to it and causes it to be termed "the queen of weapons."

After the decline of chivalry and introduction of gunpowder, the lance lost much of its prestige, and although used to some extent, was little heard of in European wars. None of the generals who knew how to make the best use of their cavalry, CHARLES XII, GUSTAVUS ADOLPHUS or FREDERICK THE GREAT, employed it, but depended entirely upon the sword as the weapon for the shock. In France it was revived by Marshal SAXE and then practically disappeared until NAPOLEON created several regiments of lancers in his armies. After Waterloo the British created some lancer regiments and since that time nearly all of the European nations have had a small portion of their cavalry armed with the lance, although it has apparently been considered of very little importance until the recent German revival.

In 1890, according to information received from the Military Information Division of the Adjutant General's office, the different European nations had the following proportion of their cavalry armed with lances:

Germany	58	regiments	out of	93
England	5	"	" "	31
Belgium	4	"	" "	8
Italy	10	"	" "	22
Spain	8	"	" "	24
France	12	"	" "	85
Russia	17	"	" "	75*
Austria	11	"	" "	41

Since that time the lance has been adopted as a part of the armament of all the German cavalry, while it is understood that Russia is the only nation which is not following the German lead, and that she has abolished the lance in all her regular cavalry and retained it only for some of the Cossack regiments, who look upon it almost as part of their religion. General SKOBELEFF, after considerable experience with the weapon, was decidedly opposed to it as a part of the armament of the Russian cavalry.

In the past the lance has generally consisted of a shaft of some

*Not including Cossacks.

kind of wood, preferably bamboo, on account of its lightness and toughness, with a metal head joined to this shaft. A lance of this kind was liable to be cut by the stroke of a sharp saber and was easily broken by the horses, while if the shaft was made heavy enough to resist these, it was too cumbrous to be easily handled. The lance now adopted in the German army consists of a hollow tube of thin steel about ten feet long with a triangular head and pointed butt. This is lighter than the wooden lance and much superior to it in resisting power.

Much has been written lately, especially in Germany and France in favor of the lance as the *arme blanche* for cavalry. Both of these nations now believe in the future use of the mounted arm for shock, not only against other cavalry but against infantry as well, and they naturally desire to find the best weapon for that purpose. The arguments in its favor may be condensed into the following brief statement:

The lance is considered to be the best arm for the cavalry on account of its superior moral effect, encouraging the troops behind it and intimidating those opposed; especially if these latter are untrained men or badly shaken by long exposure to infantry and artillery fire. And it is claimed that it will be especially useful in charging infantry, since the latter will probably be lying down and cannot well be reached by the saber, but can by the lance.

It may be admitted that certain exceptional occasions might arise in which the lance would be the superior of the sword for the shock, but at all other times it would be a decided incumbrance. In order to obtain a good effect with the lance the most favorable combination of circumstances must exist. Even MONTECUCULI, who is often quoted as one of the great advocates of the lance, says: "That of all arms on horseback the lance is the best, *provided* the lancers are vigorous, armed from head to foot, have first-class horses, and level, firm and unobstructed ground to operate upon, with a body of cuirassiers at hand to follow up success; otherwise the lance is useless."

There can be no question that for reconnaissance work and for all other purposes than the actual shock the lance would be not only useless but very much in the way. With the pennon it betrays the presence of the trooper, and in any case it interferes with his riding through pieces of woods or similar obstructions, when without it he would have but little trouble. It is universally admitted now that cavalry on reconnaissance or outpost duty must be prepared to dismount and fight on foot, and they are armed for just such a contingency. Under such circumstances the lance must be very much

in the way, and would interfere to a marked extent with the freedom of motion of the trooper in mounting and dismounting, and in moving the led horses. It is understood that such has been found the case in very recent European maneuvers, and to an extent which must be seen to be realized. Furthermore, in the German cavalry at present only two-thirds of the men can be placed on the dismounted fighting line. It has been proposed to obviate this by arming only the heavy cavalry which is to be used for the charge with the weapon, and omitting it from the equipment of the light cavalry. But this would seem to be introducing a considerable amount of complication to obtain the very doubtful good resulting from the lance, especially as circumstances may arise which will require the use of any or all of the cavalry for outpost duty. It would seem better to have an armament suited for any emergency.

Another objection is that in order to make a horseman skillful in the use of this weapon he should have a large amount of training, otherwise he will probably be more dangerous to friends than foes. The Germans claim that the three years with the colors gives them ample time to instruct the cavalry soldier thoroughly in the use of all his weapons, lance included. Those of us who have had some experience with the cavalry arm of our service, and have seen the difficulty often experienced in teaching the average recruit how to properly manage his horse without anything, even a saber, in his hands, may be allowed to indulge in a mild feeling of incredulity as to the absolute correctness of this statement. The Germans are far from being remarkable in their horsemanship, nor is the intelligence of their rank and file above that of our recruits. Consequently we feel safe in saying that among the men constituting a troop there would be found a by no means inconsiderable number who would never become expert riders, and who, if armed with long lances having sharp butts, might, in a charge at high speed, do most serious injury to their comrades and horses. And if these same men, or even more expert riders, should attempt in the charge to spit an infantryman lying on the ground, is there not a decided chance that the lance would miss the object at which it was aimed, and, becoming imbedded in the ground, unhorse its bearer? Those who may have ridden at rings with a lance know how very easy it is to miss the mark when going at speed.

Another awkward feature of the lance is, that after the first shock comes the period of hand to hand fighting, when the lance could not be used with much effect. The pointed butts might help a little, but what show would a man, holding by the middle of a ten

foot pole sharpened at both ends, have in such a mêlée against an expert swordsman or a good revolver. To be sure the lancers are armed with sabers for such contingencies, but during the time consumed in dropping the lance and drawing the saber, which may be some little time in the crowding and confusion, the trooper will be absolutely defenceless. The proposed remedy for this is to have only the front rank armed with the lance and the second rank with the saber. But since in advancing to the charge the vacancies which may occur in the front rank are supposed to be filled from the rear rank, by the time the objective was reached there would no longer be presented that unbroken line of lances to the moral effect of which so much importance is attached.

How long the present enthusiasm in Europe on the subject of this weapon will endure is yet to be determined. The young ruler of Germany is very much prejudiced in its favor, and so long as Germany persists in it, all the other nations, excepting Russia, are likely to follow suit. It may gradually die away or it may exist until the next war settles the question, in so far as it can be settled, either for or against the weapon. But in the meantime we may be allowed to persist in the belief that the theoretical armament of the American cavalryman is the best in the world, and if we can have long range magazine carbines, efficient revolvers and a saber that has a point sharp enough to penetrate at least the clothing of the adversary, other nations are welcome to surround each and every individual cavalryman with a forest of lances, if they so desire.

FORT MONROE, VA., June 18, 1892.

CAVALRY UPON THE FIELD OF BATTLE; BY LIEUTENANT-COLONEL PREJENTSOFF, OF THE GENERAL STAFF OF THE RUSSIAN ARMY.

TRANSLATED FROM THE RUSSIAN,

BY FIRST LIEUTENANT GEORGE W. READ, FIFTH CAVALRY.

III. THE FRENCH CAVALRY IN THE TIME OF LOUIS XVI., THE REPUBLIC, THE CONSULATE, AND THE FIRST EMPIRE.

WHILE the cavalry of FREDERICK THE GREAT was being so rapidly improved, in France and Austria this arm of the service remained in the same condition as during the Seven Years' War.

Up to 1750 the French cavalry was placed upon the flanks in the general order of battle, with battalions of infantry in square on the outward side to support it by their fire. It met the attack of the enemy at first with fire and then with the *arme blanche*. The Austrian cavalry in most cases acted in precisely the same way. In the minor operations of war the French cavalry was considerably more energetic and mobile than the Austrian. Many of the French generals of the period gave special attention to the correct training of the cavalry in time of peace, and to the development of its ability to use the *arme blanche* upon the battle-field.

The views of Marshal SAXE, a contemporary of FREDERICK THE GREAT, serving in France, in regard to training cavalry in time of peace, are highly instructive. Among other things on this subject he says in his "Rêveries":

"In order that cavalry may be mobile it must be mounted upon horses inured to work, and must have the most limited baggage. *Under no circumstances should an attempt be made to fatten the horses.* In Poland I had a regiment of German cavalry with which I made more than 3600 miles in the course of eighteen months, and I can affirm that at the end of that time this regiment was in better fighting trim than any other with fat horses; but the horses must be inured to work gradually, and *should be strengthened by long rides and*

spirited drills, which will improve their health and endurance. In this way only can the cavalry always be fully prepared for war. All this also improves and trains the personnel and prepares it for battle. Cavalry should also be exercised in the gallop and charge, by deployed squadrons, afterwards passing gradually to a slower gait. It will not suffice to execute cavalry maneuvers only once in three years, and then maneuver at the slower gaits for fear of making the horses sweat. I affirm that if a horse is not worked much in time of peace and is not trained to endurance, he is exposed to many accidents in campaign, and in the end will refuse to perform service."

These views of Marshal SAXE cannot be considered obsolete; they are so correct that it can only be regretted that what he advocated is to-day forgotten, and that in time of peace the cavalry puts forth claims of quite another character. Time was necessary to prove the soundness of the cavalry system established by FREDERICK THE GREAT, and to make the proper application of his fundamental principles understood.

The renown of the brilliant deeds of the Prussian cavalry upon the battle-field compelled other rulers to attend to the proper training of their cavalry in time of peace, and to its proper use in action. And, indeed, they gradually began to imitate the system of training of the Prussian cavalry, giving attention to individual instruction; the troopers were taught the progressive attack, taking the trot at one hundred paces from the enemy, but afterwards increasing the gait, and at thirty paces passing to the gallop.

Marshal SAXE considered this insufficient, and claimed that the attack should be made, as with FREDERICK THE GREAT, at the most rapid gait. "*Squadrons which are not in condition to attack from 2000 paces at full speed without being broken*," wrote the Marshal, "*are good for nothing for war;* the Prussian cavalry does it easily."

To attain good results in the instruction of cavalry, Marshal SAXE considered it indispensable *to make long rides even in winter*, and to drill at the more rapid gaits at least three times a week. He gives the following advice: "*In time of peace, tire the men and horses as much as possible, for it is only in war that it is necessary to save them.*"

The Marshal criticises the order of battle of the period on the ground that mutual support was not given by the intermixed infantry and cavalry. "If the cavalry is turned back," says he, "the flanks of the infantry are uncovered and the battalions upon the flanks of the cavalry must be considered lost." He proposed the placing of separate bodies of infantry in square behind the second line of the cavalry, to serve as a final support as well as a rallying place.

It is impossible to pass over in silence the views expressed by Count HEBERT in his "Essai de Tactique," which appeared in 1773.

"In the less civilized nations, cavalry has always been the first arm of the service; in the more enlightened ones, although it has passed to second place it yet forms an indispensable part of the army and often has decisive importance in battles. Improvements in the art of war give a greater scope to infantry than to cavalry; infantry being capable of all kinds of fighting, in all seasons, day and night, and upon all kinds of ground, can act independently; but cavalry is adapted to but one kind of fighting and to ground which is known to be favorable, and therefore it cannot be used without infantry. I consider cavalry the second arm of the service," says HEBERT. "I acknowledge, also, that it must form an indispensable part of every army.

"In fact, the cavalry often decides the fortune of battle, makes it possible to more fully reap the fruits of victory, and protects the defeated infantry; it exclusively performs the scouting service, and upon it are imposed all operations in which celerity of movement is essential.

"Infantry, it is true, could operate without cavalry, but all its movements would be extremely sluggish; it would risk being often stopped unnecessarily, and would meet with accidents. Cavalry without infantry could not take advantage of the results of its success and strengthen itself at the points occupied; but in general, cavalry should rather be few and good than the reverse.

"The greater the improvements in the art of war, the more convincing is the truth that cavalry needs special training and must be maintained in time of peace in the same numbers as in war. Cavalry in battle acts in the attack by shock alone; its fire has very little effect upon the enemy. Capable of moving quickly from one point to another, it can quickly change the course of events, but in order to preserve this ability, it must not be weighted down with equipment and armament, nor impeded by a variety of complicated formations.

"While moving to the attack, cavalry acquires strength of shock, which depends chiefly upon rapidity and the number of men in the first rank; in order to increase the strength of shock in a cavalry attack, it is necessary to increase not the depth of formation but the rapidity of movement. The usual formation of cavalry should be in two ranks, not because the second rank can increase the strength of the shock, but because it is necessary to make good the losses of the first rank and thus preserve its intervals. The strength of a

squadron should be from 150 to 160 horses, for the cavalry fight is not decided by a frontal but by a flank attack, and therefore squadrons of the less strength are better adapted to envelop the enemy's flank, preserving the better order for the shorter front.

"Much time is necessary," says HEBERT, "to make a good trooper with a firm seat on his horse, and the ability to manage the worst. It is only after a service of some years that a soldier becomes a trooper *who will acknowledge nothing as impossible for himself and his horse.*

"Cavalry is the arm of inspiration; it is necessary to grasp the situation and to choose an auspicious moment both for the maneuver and for the attack. *In a cavalry fight, all depends upon the commander, who must possess an accurate coup d'œil and experience.* There is still a great deal to do for the cavalry; it is necessary to solidly establish the principles upon which it shall be organized, to determine its battle order, to simplify its formations, and to seek to have them assumed with the greatest rapidity and boldness."

These views of General HEBERT at first had many enemies, but it was finally understood in France that it was necessary to improve the training of cavalry during peace, and it began to be taught—not to shoot, but to execute an attack in deployed order. Efforts were also made to develop great mobility and skill in using the *arme blanche.*

At that time particular attention was given to instruction in horsemanship, special schools were founded, and in many places garrisoned by cavalry regiments the manége was established. In other words, in imitation of FREDERICK THE GREAT, a more careful individual instruction of the troopers was begun.

At the beginning of the Revolution, new principles in the conduct of war appeared in the French army. Not being able to stand against the well formed and tactically well instructed troops of their enemies, the French devised a new kind of fighting which permitted them to avoid any decisive engagement. Military operations assumed the character of a multitude of small skirmishes which might be renewed daily without producing important results. Such fighting of course required an abundance of men, and could only be carried on in close country.

There was no deficiency of men in France, and notwithstanding the steady decrease, bodies of irregular troops could be formed instantly; therefore it was possible for the Republican armies to oppose masses to the skill of the enemy.

As it was difficult to provide such an army with all the neces-

saries and to subsist it from magazines, the French renounced the existing systems of supply and required the country where military operations were being carried on, to furnish all that was needed by the soldiers, who were without kettles, tents, baggage trains, and even provisions and clothing. There was neither time nor means to train this huge army, and therefore the personnel of the bodies of irregular troops could be improved only by the daily skirmishes with the enemy. In reality, however, the masses which had received no training in time of peace but uninterrupted training in fighting with the enemy, began, little by little, to win some success.

That to which necessity involuntarily, so to speak, gave rise in 1792, was approved by the citizens in the following year.

In his report in 1793 to the Committee of Public Safety, CARNOT says with respect to the system of operations in the war:

"The number of soldiers must be doubled, so that in spite of the inevitable losses, and without being troubled in regard to promptly making them good, all the efforts of the military skill of our enemies may be opposed by masses. Nothing can be easier than to conduct the war by masses, *i. e.*, to surpass the enemy at all points in numbers and artillery. We must always wage an offensive war. The generals must be charged, as a sacred duty, with fighting at the head of the columns and with being an example of courage and self-sacrifice to their men, accustoming them never to consider the enemy, but to promptly attack him with the bayonet without being checked by firing and maneuvering, in which our soldiers are insufficiently, or rather say, not at all trained. Moreover, this kind of warfare is quite natural to the character of the Frenchman, to his dexterity and vivacity, and should gain us the victory because its novelty will embarrass the enemy."

In consequence of the adoption by the French of the new principles for conducting military operations, the battle itself became more movable. The Republicans, scattered by whole battalions in crowds of skirmishers, and having dense columns behind them, acted as light infantry supported by light artillery. *Like the infantry, all the cavalry was transformed to light.* Heavy regiments, while still so designated, acted as light.

In the first wars of the Revolution cavalry was rarely present on the field of battle, as it was too poor in composition, and without proper training. There was no time to train it properly, and the masses of the French people were far from abounding in natural cavalrymen; moreover, at that time, French horses were almost worthless at best. Consequently the cavalry of the Republic seldom took part in the fighting, but was found for the most part in reserve behind the line of battle, or was sent from the field to perform the minor operations of war.

By the decree of 1793 the organization of the French cavalry was defined as follows: Twenty-nine regiments of heavy cavalry, four squadrons in each, 177 horses to the squadron; two regiments of carabineers and fifty-four regiments of light cavalry, composed of twenty dragoon regiments, four squadrons in each, 225 horses to the squadron; twenty-five chasseur regiments, four squadrons in each, 220 horses to the squadron; and eleven hussar regiments, four squadrons in each, 250 horses to the squadron—in all 332 squadrons, about 60,000 horses.

Organized at first upon the model of FREDERICK THE GREAT, the horse artillery consisted of eight regiments (4000 men); each regiment had six batteries, with six guns and eighty cannoneers to the battery—in all 288 guns, or almost five guns per 1000 cavalry.

Infantry, artillery (foot and horse) and cavalry entered into the composition of the division which, at the time of the Revolution, was the established independent tactical unit; in each division were four demi-brigades of infantry (twelve battalions), one dragoon regiment (four squadrons), one chasseur regiment (four squadrons), one battery of foot artillery with six guns, and one battery of horse artillery with six guns—making twelve battalions, eight squadrons, six foot guns and six horse guns; in all about 12,000 men, the proportion of cavalry to infantry being one-sixth.

Such an organization was favorable to mobility, and made it possible to undertake more decisive operations, though the distribution of two regiments to a division lessened the importance of the cavalry, and limited its use upon the battle-field.

There were no independent bodies of cavalry of importance, and the chief function of this arm was lowered to the minor operations of war and to service with the infantry. The absence of cavalry from the field of battle soon illustrated all the disadvantages resulting from its apportionment among the divisions, and therefore at the beginning of the campaign of 1797, General HOCHE, commanding the forces upon the Sambre and Moselle, began to consolidate the cavalry into strong units, and to form entire divisions of hussars, chasseurs and dragoons. General BONAPARTE, commanding the Army of Italy in 1796 and 1797, also frequently detached the cavalry regiments from the divisions of the three arms, to obtain a cavalry reserve, with the object of using this arm in masses upon the field of battle.

From what has been stated it is seen that at the time of the Revolution the French cavalry lost all importance upon the battle-field, not in consequence of the efficiency of fire-arms and of the

impossibility of attacking infantry, but on account of its good for nothing composition and the absence of training in time of peace. The organization of divisions with tactical independence caused the French cavalry to lose all importance in battle, converting it into an auxiliary, a secondary arm of the service; but afterwards the first plan of the new principles in regard to the reciprocal action of the three arms was abandoned. The First Consul appreciated the importance which may be attached in battle to the union of the three arms of the service in bonds of the closest intimacy among themselves, and therefore found a method of deriving from this the greatest advantage in attaining the final end. General BONAPARTE, like FREDERICK THE GREAT, found a suitable place for cavalry in battle, and if it did not appear to him as the sole decider of the engagement, it was at any rate not considered a secondary arm of the service.

The changes which took place in the battle formations of the infantry and artillery, and the great efficiency of fire, were bound to have an influence upon the leading of cavalry in action. In the battle formations, cavalry was no longer placed upon the flanks but behind them in echelon or in the second line, in order that its commanders might not allow the favorable moment for an attack to escape them, and might not be in want of orders from higher authority.

For the first time in the epoch under consideration, the French cavalry took a more prominent part in action at Marengo, in 1800. In this battle the glory of the victory belongs chiefly to the cavalry, which, in close conjunction with the infantry and artillery, exercised a decisive influence upon the results of the day by its attacks upon the infantry and cavalry of the enemy.

As the use of cavalry at Marengo was in an entirely different situation than in the time of FREDERICK THE GREAT, we consider it necessary to touch upon this battle somewhat in detail. Undertaking a sudden descent upon Italy from the snowy summit of the Saint Bernard, the First Consul could not have a suitable proportion of cavalry with his army. The formation of this expeditionary army was effected with great secrecy, and it was therefore unsafe to fill up the cavalry in good time by the purchase of horses or to concentrate it at the starting point in greater numbers. Under these circumstances, General BONAPARTE was limited, in the composition of his force of 50,000, to about 7000 cavalry, *i. e.*, one-seventh part.

After the movement on Milan, when General BONAPARTE came out to meet the Austrians under General MELAS at Marengo, he had

in his army the following cavalry commanded by General MURAT, viz: five regiments with infantry brigades (one heavy regiment, one of dragoons, one of chasseurs, and two of hussars), one squadron of grenadiers and one squadron of chasseurs of the Consular Guard, aggregating 1461 horses, and three separate bodies: General KELLERMAN'S, composed of three heavy regiments, in all 470 horses; General CHAMPEAUX'S, of three dragoon regiments, 998 horses; and General RIVAUD'S, of two regiments, one of chasseurs and one of hussars, 759 horses in both; making a total of forty squadrons, about 3688 horses, which in proportion to the 23,790 infantrymen taking part at Marengo, was about one-sixth.

Approaching the village of San Giuliano (map 4), on the 13th of June, the First Consul immediately sent out cavalry to reconnoiter. The French cavalry while dislodging the advanced posts of the Austrians as far as the river Bormida, discovered a force of the enemy in the village of Marengo, which was immediately reported. In consequence of this information, General BONAPARTE ordered General VICTOR, with the advanced guard division to take the village, which was accomplished, the Austrians being driven back to where the Tortona Road crosses the Bormida. The pursuit by the French was checked by a strong artillery fire from a tête de pont constructed by the Austrians on the right bank of the river. VICTOR fell back a little to the village of Pedrobona.

In the evening of this day the French army of forty-five battalions and forty squadrons, under command of General BONAPARTE, occupied the following places: General VICTOR with two divisions as the advance guard, had the division of GARDANNE (3600 men) at the village of Pedrobona across the high road from Alessandria to Tortona, in front of the tête de pont at the Bormida occupied by the Austrians, and the divison of CHAMBARLHAC (5200 men), and the cavalry brigade of KELLERMAN in the village of Marengo. General LANNES, with WATRIN'S division (5000 men), and the cavalry brigade of CHAMPEAUX, occupied the village of San Giuliano, about four and a half miles behind; and still further, about nine miles from Marengo, at the village of Torre di Galifolo was General BONAPARTE with the Consular Guard (1200 men), and the division of MONNIER (3600 men); General DESAIX with BOUDET'S division (6000 men), was at Rivalta, on the road to Novi, about six and a half miles south of Torre di Galifolo, to impede the Austrian movement on Genoa; and RIVAUD, with a cavalry brigade was in observation on the extreme right flank at Salé, about ten miles north of Torre di Galifolo. The Austrian army, about 35,000 strong (of which number about 7000 were cav-

alry), was concentrated upon the left bank of the Bormida in the fortress of Alessandria, and occupied the tête de pont on the right bank of that stream upon the road to Tortona, with a strong advanced guard.

The plain of Marengo, where the battle took place upon the following day, lies between the rivers Scrivia and Bormida, and extends from west to east for about nine and a quarter miles. It is intersected by three highways leading from Alessandria to Pavia, to Piacenza through Tortona, and to Genoa. To the east of the Bormida, near and parallel to it, the brook Fontanone flows in a strong and rather deep channel. Two miles east of the Bormida bridge, on the road from Alessandria to Tortona, is the village of Marengo, the buildings of which are *mostly* of stone. Northeast of Marengo, on the road from Alessandria to Pavia, is the village Castel-Ceriolo, upon an elevation commanding the entire locality. Between these villages and the Scrivia, the plain presents an entirely smooth surface, with no local obstacles, excepting here and there a village or a vineyard, so that it would be hard to find more favorable ground for cavalry operations, and it could be seen in advance that this arm of the service would possess decisive importance in the battle which was imminent for the following day.

At sunrise on the 14th of June the Austrian army set out from Alessandria, and about eight o'clock in the morning, having completed the crossing of the Bormida by two bridges, debouched on the plain of Marengo in three columns. The right column, General OREILLY, four battalions and six squadrons strong (2800 men and 800 horses), moved up the Bormida in the direction of Stortigliona; the middle under the immediate command of MELAS, and comprising twenty-eight battalions (14,200 men), under Generals HADDICK and KAIRN, and twenty-two squadrons (3700 horses), under General ELSNITZ, moved directly on Marengo; the left column, General OTT, of sixteen battalions (6800 men) and six squadrons (740 horses), was directed on Castel-Ceriolo. Seventeen squadrons of the general strength of the Austrian army were detached from the field of action and dispatched towards Cantalupa.

Having received a report of the Austrian advance, VICTOR deployed CHAMBARLHAC's division in a semi-circle in two lines, with the right flank at Marengo and the left on the brook Fontanone, with the cavalry brigade of KELLERMAN behind the left flank. The columns of the Austrian advance guard under OREILLY began the fight at Pedrobona with GARDANNE's division, and soon forced it to retire to Marengo, where it connected its left flank, prolonging the battle

order of CHAMBARLHAC to the right. Thus the foremost French divisions were in order of battle at the village of Marengo, having in their front the quite difficult, though fordable, brook Fontanone. In view of the greater accessibility of the left flank, a French cavalry brigade was placed behind it. Up to 11 o'clock in the morning the fighting was for the crossing of the Fontanone; the French obstinately resisted the attempts of the Austrians to cross the brook, and this obstinacy was increased when LANNES came up on the right flank with WATRIN's division, having the cavalry brigade of CHAMPEAUX echeloned to the right rear.

The position of the French cavalry was entirely suited to the ground, and while securing the flanks, made it possible more than once to coöperate with the infantry; for example, about 11 o'clock in the morning, when the Austrian dragoons completed the crossing against the left flank of the French, they were immediately attacked by KELLERMAN and thrown back beyond the brook. Up to noon the attack of the Austrians was checked, but after that, with the arrival of reinforcements and the successful building of a bridge across the Fontanone opposite Marengo, the French, being without reserves, began to waver. The position of the French troops at Marengo became critical when their left flank was turned by General OREILLY, about 1 o'clock in the afternoon, and General OTT, who had moved upon Castel-Ceriolo without continuing the advance towards Salé, deployed within gun-shot on the right.

The numerous Austrian cavalry operated energetically though unsuccessfully against the flanks of the French battle-order, but the enemy's infantry, more and more reinforced by arriving troops, pressed in front more persistently.

VICTOR and LANNES, having against them forty-eight Austrian battalions, were soon in no condition to hold the position occupied; orders were therefore given for the retirement of the twenty-seven and one-half battalions which had already undergone three hours' fighting. The French infantry began to retreat by echelon from the left, in full order, sometimes halting and defending itself by firing and always covered by its cavalry. The cavalry brigade of General KELLERMAN followed, screening the infantry in its front from the enemy, and in spite of the heavy infantry and artillery fire of the Austrians, moved at a walk, by platoons, wheeling about whenever it appeared to be necessary to check somewhat the pursuit, by an attack, and thus deprived the pursuers of all trophies. The right flank of the retreating French was also actively protected by the cavalry brigade of General CHAMPEAUX.

During the retreat of the divisions of LANNES and VICTOR, General BONAPARTE, with the Consular Guard and the division of MONNIER, (nine battalions), arrived upon the field between 1 and 2 o'clock. The arrival of the First Consul, although it improved the morale of the French army, did not change the course of the battle. General BONAPARTE, seeing that it was infeasible to resist the Austrians with a front so superior to him in strength, ordered the division of MONNIER to move to the right of LANNES and hold the position of Castel-Ceriolo with a view to attracting the attention of the enemy and of checking somewhat the attack of the Austrians against the front. At the same time an order was sent to DESAIX to hasten to the field of battle. General MONNIER took the village of Castel-Ceriolo and drove a few Austrian troops to the Bormida, but without influencing the operations of the enemy's center, which continued the attack with its former persistence. To fill the gap between the right flank of LANNES and the division of MONNIER, the Consular Guard, with a few squadrons of CHAMPEAUX's brigade, was used. This model French force stubbornly repelled the attacks of the infantry and cavalry of OTT's Austrian columns; but, crushed by the numbers of the enemy and with a loss of one-fourth its strength, it was obliged to retreat; whereupon, forming square and placing its wounded inside, it began a gradual movement in the direction of San Giuliano. After the Consular Guard followed the division of MONNIER, and thus the French army in all its parts retreated under the pressure of the numerous enemy, bestrewn by the shells of the artillery and attacked in front by infantry and upon the flanks by cavalry. The battle seemed lost. That the French army was not dispersed by the considerable Austrian cavalry, thanks were due only to the brigades of KELLERMAN and CHAMPEAUX, which sacrificed themselves to save the infantry.

The Austrians, having gained such a victory, passed from order of battle into columns of march for the pursuit, the main body moving along the high road to Tortona. General MELAS, wounded during the battle, returned to Alessandria in order to send word to Vienna of the victory gained over the French, and the chief command passed to General ZACH. At this time the First Consul received a report of the appearance of the head of DESAIX's column at San Giuliano. This was about 5 o'clock in the evening.

General BONAPARTE immediately determined to check the enemy, and, assuming the offensive, to wrest the victory from the grasp of the Austrians. The French troops occupied the following positions: DESAIX, with BOUDET's division of nine battalions (5800 men), was

placed in front of San Giuliano; his infantry, covered by hedges and vineyards, occupied a position on the right and left of the high-road to Tortona and formed the left flank of the order of battle, having two regiments of cavalry in echelon on its left; 500 paces to the right of BOUDET's division was the cavalry brigade of KELLERMAN, numbering in all 150 horses; it covered a twelve-gun battery established by MARMONT to sweep the road. Three other squadrons were soon after added to KELLERMAN's force, so that he was able to count 400 horses. Within cannon shot to the right of KELLERMAN were posted the chasseurs of the Consular Guard, numbering 600 horses. Behind the brigade of KELLERMAN were collected the fragments of the divisions of GARDANNE and CHAMBARLHAC. The division of MONNIER, with the infantry of the Consular Guard, formed the right flank; in the center was LANNES with WATRIN's division. In the rear, General DUPONT rallied the disorganized French troops to form a reserve.

Meanwhile the Austrians continued the attack with the main body in column of march, without special precautions, on the high-road to Tortona. Upon the left flank of the main body were six regiments of cavalry, and to the left of them, about three and a quarter miles, in the direction of Salé, moved the column of OTT; OREILLY followed on the right flank. They numbered in all about 20,000 men, with eighty guns and 5000 cavalry.

To these forces of the enemy, General BONAPARTE was able to oppose 5000 who had not been in the battle and 5000 who had taken part and were arranged in order, with twelve to fifteen guns and 1000 cavalry.

No sooner did the Austrian troops reach the line of the village Cassina-Grossa than they were met by the fire of BOUDET's division, which forced them to deploy. Taken by the cross-fire of MARMONT's artillery, the Austrians were stopped; their first line retreated upon the second, and immediately afterwards the Austrian grenadiers were attacked by the French cavalry regiments of BOUDET's division. The attack was unsuccessful, whereupon the Austrian grenadiers assumed the offensive, and in view of their increased reinforcements, might finally have brought about the full and conclusive defeat of the French army; but this did not happen, because *the French cavalry was able and was not afraid to attack the enemy's infantry, and to sacrifice itself for the relief of its own infantry, and because the cavalry generals of the French army possessed sufficient independence, understood the situation of the battle, and did not need directions from higher authority in regard to what was necessary to be done.*

As soon as General KELLERMAN, who, with his brigade in order of battle, was upon the right flank, and somewhat covered by vineyards, observed the approach of the enemy, he deployed his brigade and commanded: "By platoons, to the left; march!" The attack was made at exactly the right time; it checked the Austrians, cut up a few of their battalions, and threw the remainder into great disorder. The trophies of the fight were the capture of General ZACH, six colors and four guns. The shock of the French cavalry had a decisive effect, and served as a signal for the French troops to assume the offensive. The second brigade of BOUDET's division broke through the enemy's center and cut him in two; at the same time KELLERMAN, with 200 horses, on the approach of the Austrian cavalry from the right, changed front and rushed upon the enemy; the Austrian cavalry retired without awaiting the attack. Reinforced afterwards by the cavalry of the Consular Guard, General KELLERMAN moved against the main body of the Austrian cavalry, detained up to this time on the road to Salé by the French cavalry brigade of RIVAUD. About 2000 Austrian dragoons were overturned upon the column of General OTT, which was thrown into great disorder. The hitherto victorious Austrian army, in complete confusion, began to retreat, and found safety only upon the banks of the Bormida, within the fortifications, after crossing that stream. The column of OTT fell back upon Castel-Ceriolo, and afterwards beyond the Bormida.

The losses of the adversaries in this battle were as follows: The Austrians, 963 killed, including fourteen officers; 5518 wounded, including five generals and 283 officers; 2921 captured, including General ZACH and seventy-four officers; the Austrian cavalry lost 1493 horses. The French had 1100 killed, including Generals DESAIX and CHAMPEAUX; 3600 wounded, including three generals, and 900 prisoners.

Such was the battle of Marengo, which lasted thirteen hours, and which shows what wonders can be accomplished upon the field of battle by cavalry having at its head experienced and resolute generals.

Concerning the use of the cavalry in this battle, it may be said that the Austrians were unable to take advantage of their numerical superiority in this arm of the service. The Austrian cavalry, the administration of which was not united in a single hand, set out from Alessandria mixed with the infantry columns, and completed the passage of the Fontanone under the enemy's fire; but afterwards, caught in the sac between the villages of Marengo and Castel-Ceriolo and the brook Fontanone, it was impossible to take advantage of its numbers and of the favorable conditions of the locality. The sending of the seventeen squadrons from the field of battle only weakened the Austrian troops.

The action of the French cavalry was above reproach; in the general order of battle it occupied the most suitable position, covering the flanks of the infantry and protected by the latter from a front attack. Controlled by a single chief, it could always exert its influence, and in masses. The brigades of KELLERMAN and CHAMPEAUX were in line of battle all the time and did not allow a single favorable movement to escape for the attack of either the cavalry or infantry of the enemy. When the French infantry wavered and began to retreat, it was covered by the cavalry, which acted with so much energy that the attack of the still undisordered Austrian infantry was temporarily checked. The French infantry retreated in order, thanks only to the exemplary conduct of its cavalry, and when the infantry was reinforced and again assumed the offensive, the French cavalry attacked both the infantry and cavalry of the enemy and coöperated so effectively with its army that General BONAPARTE was enabled to gain a complete victory. At the beginning of the battle General KELLERMAN's brigade numbered 470 horses; at the end, in all only 150; but losses did not weaken this body of cavalry in the hands of its experienced chief, and when necessary, it continued to protect its infantry with its former energy, and *in a brilliant manner performed the functions of cavalry upon the field of battle.*

The operations of the cavalry at Marengo clearly showed the First Consul that this arm of the service, by its suitable use in battle, could contribute immensely to the victory; therefore, General BONAPARTE, like FREDERICK THE GREAT, immediately took measures for the proper training of the cavalry in time of peace, and at the same time urged on, *by means of the joint instruction of his cavalry with the other arms, the strengthening, as far as possible, of close relations between the different arms of the service.*

The First Consul also gave attention to the development in all cavalry formations of the greatest flexibility and of the capacity for rapid maneuvering. Afterwards, while he was Emperor, NAPOLEON considerably increased the cavalry. In 1796 it composed one-tenth of JOURDAN's army, and one-twelfth of MOREAU's; but in the middle of NAPOLEON's reign, its numbers reached one-fifth and even one-fourth those of the infantry. The French cavalry at the time of the Empire was organized as the heavy: Carabineers, cuirassiers, and horse grenadiers; the line dragoons. And the light: Hussars, chasseurs, chevaux-légers, guides, and guard of honor. In 1804 there

were in all seventy-eight cavalry regiments of four squadrons each, viz: Two regiments of carabineers, of 640 horses each; twelve of cuirassiers, of 640 horses each; thirty of dragoons, of 888 horses each; twenty-four chasseurs, of 832 horses each; and ten of hussars, of 640 horses each; aggregating, according to the returns, about 62,000 horses. The heavy cavalry and the cavalry of the line were used as a reserve; but the light, consolidated into divisions, though sometimes only into brigades (of two or three regiments), formed part of the newly organized corps of the three arms of the service, and was also added to the reserve cavalry for the performance of the security and information service. Cavalry was omitted from the composition of infantry divisions.

According to the statements of military writers, the composition of the French army, in 1805, was excellent in every respect, especially as far as the cavalry was concerned. The latter, with the experience of the Revolution, was well instructed and possessed great mobility and capacity for operations with the *arme blanche*. Its commanders were experienced generals, who understood the function of their arm of the service. The infantry, intimately acquainted with the efficiency of its cavalry in the preceding wars, regarded it with great respect. The First and Second French Corps had each at this time a light cavalry division of two brigades; the Third, Fourth and Fifth Corps, a brigade; the Sixth Corps, not a complete division. Most of the brigades of light cavalry had one regiment of chasseurs and one of hussars. The reserve cavalry, under chief command of General MURAT, comprised two divisions of heavy cavalry and four of dragoons. The cavalry of the Guard, General BESSIÈRES, numbered 2500 horses. The entire cavalry comprised 40,000 horses, of which 18,000 were light cavalry and 22,000 reserve, and constituted one-fifth part. In the reserve cavalry was also a division of foot-dragoons.

This organization of the cavalry lasted almost without change during the years 1806 and 1807.

The greatest strength of the French cavalry was attained in 1812. In the French army which crossed the Niemen in the middle of June of that year, in number 480,000, there were 80,000 cavalry, *i. e.*, one-sixth. Each of the eleven corps had a light cavalry division of 2500 horses; in the cavalry of the Guard under command of EXELMANS were 8000 horses, and the reserve cavalry under MURAT consisted of four corps: The First, NANSOUTY, of three divisions, 12,000 horses; the Second, MONTBRUN, also of three divisions, 10,000 horses; the Third, GROUCHY, of three divisions, 6654 horses, and

the Fourth, LATOUR MAUBOURG, of the Polish, Saxon and Westphalian divisions, in all 7684 horses, and 6000 horses of the corps of SCHWARZENBERG.

In the campaigns of 1813, 1814 and 1815, the cavalry of the French army was of poor material and very inferior in numbers, which were only one-fourteenth or even less, of that of the infantry, and could have but little effect upon the battles of this period, making them unfruitful of results in a majority of cases, in spite of the complete success of the infantry and artillery.

With the formation of strong cavalry units, NAPOLEON gave close attention to inspiring them with the greatest independence in order that they might not require frequent aid from the infantry.

Uniting cavalry with horse-artillery was considered by NAPOLEON to give greater scope to its activity, and hence it could be charged with more serious problems.

In analyzing the battles of NAPOLEON I. in the course of his long and continued wars, one is struck with the fact that the French cavalry took a most active part in them both before and during the battle; for the most part, also, it finished the success by a pursuit upon the field of battle and upon the theater of war. In battle the French cavalry attacked the enemy's infantry, cavalry and artillery; its chiefs knew how to choose the favorable moment for the attack, and when circumstances required, did not spare their arm of the service. Before a battle the light cavalry usually made a reconnaissance, sometimes running foul of the cavalry of the enemy; but in case of a considerable superiority of the latter, it quickly retired, either through the intervals of the infantry or around the flanks. The reserve cavalry was grouped in the second line, or even in the third, and was frequently upon the flanks of the battle-order of the infantry, where the locality presented facilities for cavalry operations.

We do not meet with reproaches on the part of contemporaries in regard to the inaction of the French cavalry of the Napoleonic era upon the field of battle; on the contrary, this cavalry frequently sacrificed itself to save the other arms of the service, and operating side by side with the infantry, earned the entire confidence of that arm.

The Duke of Wellington thus characterizes the action of the French cavalry in battle in the time of NAPOLEON I.: "NAPOLEON used his cavalry, supporting it properly with his numerous artillery, to seize in time the position which he afterwards occupied with infantry or artillery; he directed the cavalry around the flanks of

the battle dispositions of the enemy, thus influencing the morale of the latter."

The attacks of the cavalry had the object of checking a dangerous movement of the enemy, or of subduing his obstinacy at the point attacked, and were always supported by the artillery and infantry, which secured the success obtained by the cavalry. For the most part the masses of the French cavalry attacked in regimental or brigade columns, *i. e.*, by deployed regiments or brigades immediately following one another. On those occasions when it chanced to pass through the intervals of the infantry, the attack was made in close column.

With respect to the position of the cavalry masses in the general order of battle, definite orders were not given by NAPOLEON I., as it was found to depend upon the locality, the enemy and the object of the action. In analyzing the battles of this epoch, however, one cannot fail to observe that in the disposition of the cavalry in the order of battle a few general principles were observed, viz: the light cavalry was usually placed upon the flanks, or upon that one which was the less secured, behind the corps to which it belonged; in the second line, and preferably in the center, the reserve cavalry was placed; farther back, and in the third line, were part of the reserve cavalry and the cavalry of the Guard, which was usually placed upon the flanks of the infantry divisions of the Guard. Such a distribution of the cavalry in the battle-order of the three arms of the service existed only before the battle, in the preparatory battle formation, so to speak; during the battle the cavalry frequently, under the personal orders of NAPOLEON, changed its position.

As above mentioned, the cavalry regiments and brigades were disposed in lines one behind another; but the cavalry corps, without being governed by fixed regulations, formed a particular order. Usually the divisions of heavy cavalry of the cavalry corps were disposed in columns with a front equal to a regiment or brigade with from fifty to eighty paces distance between the lines, consequently almost closed in mass. The light cavalry was placed on the flanks to secure them.

The favorite formation of General MURAT, who commanded the reserve cavalry in nearly all of NAPOLEON'S battles, was as follows: In the first line were placed two regiments of cuirassiers with an interval of twelve paces; 200 paces behind them were four regiments of dragoons or chasseurs, of which three regiments formed the second line, with intervals of eighteen paces, and the fourth regiment divided into groups of two squadrons each, was behind the outward flanks of the second line in columns of squadrons (map 3, fig. 1).

Both battle lines advanced simultaneously to the attack. In case the first line was overthrown, the second doubled the flank squadrons at the center and allowed the first to pass to the rear, afterwards closing and moving to the attack at the trot or passing to the gallop. Under cover of the second line the cuirassiers were rallied and became the reserve. In case of a successful attack, the four squadrons originally behind the flanks pursued the enemy.

General KELLERMAN arranged the cavalry as follows (map 3, fig. 2): The first line was formed of scouts with a small reserve. Upon the approach of the enemy, the scouts, closing towards the flanks, uncovered the second line immediately behind them, formed of dragoons or chasseurs, and which did not cover the third line of cuirassiers or the main mass of cavalry, which was 200 paces behind the second. In attacking, the cuirassiers repeated the attack of the second line, breaking through the enemy's ranks. The battle order of KELLERMAN approached more nearly the type of the order of FREDERICK THE GREAT, and was better suited to the character of cavalry fighting.

At the battle of Eckmühl, 22d of April, 1809, we meet with an order of battle entirely unsuited to the fundamental properties of cavalry. Nor does it appear alone, for it was repeated at Wagram in the same year and at Waterloo in 1815.

On the 22d of April, 1809, at the place of battle the French reserve cavalry was primarily composed of two cuirassier divisions of five regiments each, sixteen squadrons of Wurtemberg light cavalry, and twelve squadrons of Bavarian cavalry, in all about sixty-eight squadrons. All this cavalry was posted in the following manner (map 3, fig. 3): In the first line upon the right flank were the sixteen squadrons of Wurtembergers, deployed by regiments at closed distance, and to their left in the same order the twelve squadrons of Bavarians; 400 paces behind, in the second line in similar columns, were the cuirassier divisions. In the face of the collision of this French cavalry mass with twelve Austrian regiments, the Bavarians and Wurtembergers drew off on the flanks and received the formation shown in fig. 3, map 4. The French cavalry overthrew the Austrian cuirassiers, and the Bavarians dashed upon an Austrian battery, drove it from its position and carried off sixteen guns. On the same day this reserve cavalry was designated for the pursuit of the retreating Austrian army. At Egglofsheim the French cavalry overtook the Austrian rear guard, which consisted of two regiments

of cuirassiers, five regiments of dragoons, and four regiments of Hungarian hussars, with 2000 infantry and fifty guns.

Notwithstanding the strong fire opened by the enemy, the French cavalry moved to the attack in the following order: The cuirassier division of NANSOUTY deployed three regiments in the first line and two in the second, one hundred paces apart; upon the right flank in columns of divisions* echeloned from the center were the sixteen squadrons of Wurtembergers and upon the left flank, in similar order, the twelve squadrons of Bavarians. The cuirassier division of SULPICE was placed in reserve in a third line (map 3, fig. 5).

The Austrian cavalry attacked the French, having in the first line a deployed cuirassier regiment; behind the intervals came the second cuirassier regiment; the dragoons were upon the right flank and the Hungarian hussars upon the left. The collision of these masses took place at a trot, and, according to the declarations of contemporaries, formed an unimaginably dense and disordered crowd.

From what has been stated, it is seen that the battle array of the cavalry of NAPOLEON I., gradually took a form entirely unsuited to the properties of that arm. In consequence of this the attack was made without the necessary speed, frequently at a trot, and sometimes even by opening fire immediately before the shock—rapidity of movement was replaced in too great a degree by extreme closeness and depth. The losses in cavalry making an attack were always considerable. Many military writers reproach NAPOLEON for a formation of cavalry not suited to its battle characteristics; some even consider that the French Emperor was ignorant of cavalry affairs in general and did not concern himself about them. This is probably not a well founded view, as one can hardly imagine that his military genius failed to grasp sufficiently the true function, the properties, and the correct use of cavalry in battle.

If we remember how much labor and pains it cost FREDERICK THE GREAT to train his cavalry in time of peace, and how much time was spent for this purpose, the inference may be drawn that NAPOLEON could not have good cavalry in the course of all his military operations, as there was no time to instruct it. The long continued wars, almost without interruption, practiced the cavalry in the performance of the service of security and information, but could not teach masses of horsemen to maneuver in thin lines, and at the same time made it impossible to develop a good contingent of officers and leaders.

In view of all this, the absence of the peace-time training of cav-

*As here used division means two squadrons.

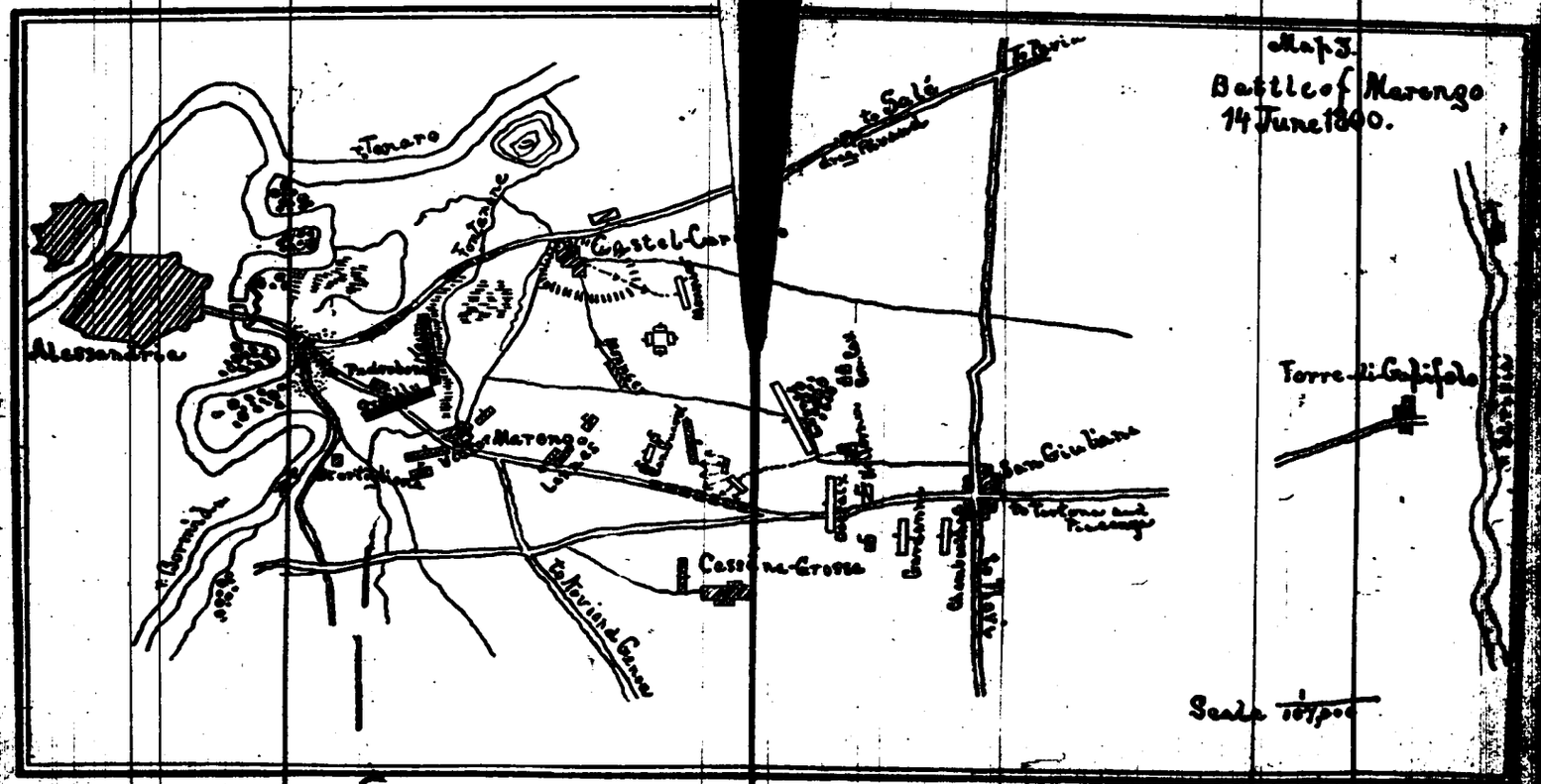

Map 3.
Battle of Marengo
14 June 1800.
Alessandria
Torre di Galifolo
Scale

Plate 9.

Fig 1.

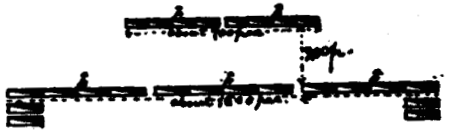


Fig 2.

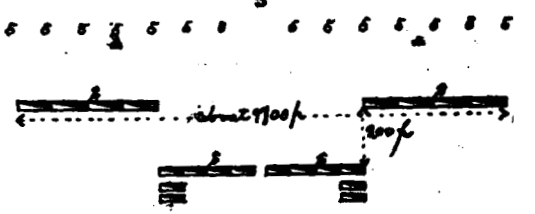


Fig. 3.

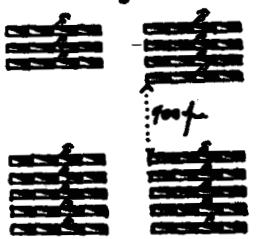


Fig. 4.

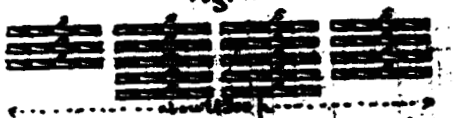
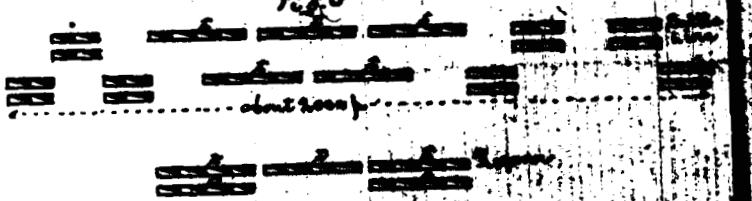


Fig. 5



alry in maneuvering and in making a closed attack by thin lines, and generally, in consequence of the incomplete training of the individual trooper, it was ventured to change the battle-order of FREDERICK, and masses, in the original signification of the word, came to be used.

FREDERICK THE GREAT notably raised the cavalry; he made it the decider of the battle; he prescribed *a system of peace-training* by following which excellent cavalry could be formed; and with an extensive battle experience, he defined a formation for cavalry masses, based entirely upon the properties of that arm of the service.

NAPOLEON I., developed *the closest connection between the operations of the cavalry and those of the other arms of the service*, and knew from experience how much the attainment of the final end in battle is facilitated by the coöperation of the cavalry. If in the epoch of NAPOLEON the cavalry did not independently decide the battle, it always helped the infantry and artillery at the most difficult moments, extricating them from danger and developing the success gained by a most energetic pursuit of the enemy, at first on the field of battle and then upon the theater of war. It is impossible to point to one of NAPOLEON'S battles in which the French cavalry was only a spectator; on the contrary, it always took an active part, and without troubling itself about losses, successfully attacked the enemy's infantry, artillery and cavalry.

We do not see this in present campaigns. Notwithstanding the most comprehensive work in training cavalry in time of peace, notwithstanding the application to it of the principles of the battle-orders of FREDERICK THE GREAT, the cavalry masses of European armies appear in modern battles as an accessory element with respect to the other arms of the service, and the main cause is to be attributed to the pernicious influence of the great efficiency of fire-arms, which paralyzes the movements of the cavalry upon the field of action.

We shall investigate the use of cavalry upon the field of battle in the campaigns of 1866 and 1870–71, and shall attempt, at least in part, to explain the causes which, besides the efficiency of small arms and artillery fire, so limited the part taken by the cavalry.

[TO BE CONTINUED.]

THE GREAT INDIAN COUNCIL: A MEMOIR OF THE DISTRICT OF THE INDIAN TERRITORY DURING THE LAST YEAR OF THE CIVIL WAR.

BY CAPTAIN T. M. SCOTT, ASSISTANT ADJUTANT-GENERAL, C. S. A.

IN THE spring of 1865 there occurred an event in the Indian country near the head waters of the Wachita River, which, in consequence of the important transactions that took place in the armies east of the Mississippi in April, attracted but little attention, but which was of vital importance at the time, and most beneficial and lasting in its results to the prosperity and continued advancement of Texas.

I purpose writing a narrative of the time, manner and consequences of that event. In doing so, nothing will be said that has already been written, except so far as may be necessary to make intelligent transactions, which, coming under my observation, have not, to my knowledge, been made public, the conclusion not having been reached until after the war was over.

During the autumn, winter and spring of 1863–64 the Texas volunteer Confederate troops being with the armies east of the Mississippi River; in the Indian Territory, Arkansas and Louisiana, the only protection on the border against incursions of roving bands of wild Indians of the mountains and plains was a cavalry regiment, under Colonel BOURLAND, stationed at Gainesville, and a battalion of like troops, under Major QUAYL, at Decatur. This force being inadequate for the defense of the long line of the frontier, the Indians entered the State, sometimes penetrating far to the interior, burned the cabins of the settlers, murdered the old men, killed or carried away captive the women and children, drove off horses and cattle, and in a general way laid waste the frontier from the Red River to the Rio Grande.

In August General GANO wrote from Fort Worth, at that time a

frontier village: "In one family the Indians killed the mother and carried off four children; in another family the wife and two children were killed and two children were mortally wounded; several men have been killed, and many herds of horses driven off."

In October General MAGRUDER requested the Governor of Texas to concentrate at Fort Belknap any troops he could control, to prevent a raid the Indians were preparing to make into the frontier counties.

Colonel BOURLAND, in December, wrote: "The number of persons killed in the last raid made by the Indians was nine citizens and three soldiers; the number wounded, four citizens and three soldiers. They burned eight or ten houses, and carried off a number of horses. The ground over which they advanced and the route along which they retreated are strewn with horses killed by them." These incidents are given to illustrate the condition of the whole length of the settled frontier.

At the same time the six semi-civilized tribes living west of Arkansas and north of Red River, whom General PIKE had induced to join the South immediately after the organization of the Confederate Government, were growing dissatisfied on account of the failure of the Confederate States to strictly carry out the treaty stipulations, and had already, by action of a grand council, held at Armstrong Academy in the Choctaw Nation, November 24th, sent a delegation of chiefs and some of the principal men of the several tribes composing the Six Nations on to Richmond, to confer with the Confederate Government.

The complaints of the Indians, and the result of the conference, will be understood by the following letter:

RICHMOND, February 22, 1864.

Israel Folsom, President of the Grand Council of the Six Confederate Indian Nations:

I have received and read with much interest your communication of the 24th of November, 1863, which conveys to me for my information certain resolutions passed by the delegates of the Six Nations, and the executives of the same, in general council assembled. The welfare of the citizens and soldiers you represent are identical with those of the Confederate States, in the great struggle in which we are now engaged for constitutional rights and independence, and you are regarded by this Government as peculiarly entitled to its fostering care.

I am, therefore, very much concerned to hear that you consider the Confederate Government has failed fully to redeem its pledges made to the Six Nations for supplies and protection. It is consolatory, however, to be assured by you that the attributed failure does

not arise from any want of good faith on our part, but from other causes which you have mentioned, and you may rest assured that those officers and agents to whom you allude as not only having neglected their duty, but perverted their authority to the commission of wrong, this Government will hold to rigid responsibility, whenever the proper proof in each case is brought before it.

Your requests, as well as your complaints, have received my earnest consideration, and I take pleasure in saying that, while it will always gratify me to be able to grant the one, I will ever most respectfully give heed to the other. All treaty stipulations between us shall be sacredly observed and carried into effect to the full extent of my power as President of the Confederate States. The policy of constituting the territory of the Six Nations a separate military department, outside the control of the Commanding General of the department west of the Mississippi, has been thoroughly considered by the Executive Government here with your delegates elect.

In pursuance of the result of that discussion, I have caused the Indian Territory to be designated a separate military district, and the Indian troops to be placed under the immediate command of General COOPER—the officer of your choice. It was thought manifestly better for the interest of all concerned that your Territory should be constituted a separate military district rather than a department, so that the Commanding General of the Trans-Mississippi Department may be responsible for the defense and protection of your district, as well as for all others under his charge, and will feel it his duty to aid and protect you with all the promptitude and efficiency that unity in the whole force will confer. This view has been presented to your delegates, and I hope, when fully explained, will meet your approval. * * *

Very truly your friend,

JEFFERSON DAVIS.

The provisions of the letter were carried into effect. Brigadier-General STEEL was relieved from command and Brigadier-General MAXEY ordered to report to General SMITH, commanding Department Trans-Mississippi, for assignment to duty as commander of the District of the Indian Territory.

General MAXEY graduated at West Point, and was assigned to duty as Second Lieutenant, Seventh U. S. Infantry, and joined his command at Vera Cruz; was in every engagement in which his regiment took part on the route to and around the City of Mexico. Was brevetted for gallant and meritorious conduct, and after the war was over resigned and settled in Lamar county, Texas, bordering on the Indian Territory. In the practice of his profession as an able lawyer he had, before the Civil War, formed an extensive acquaintance in Texas as well as among the more intelligent men of the Indian tribes along Red River. This much is said of General MAXEY, to show the character of the officer whom the people of

North Texas and the Indian Country had petitioned the President to assign to the Indian District.

The snow lay about a foot deep over the whole country, and the temperature was fearfully cold when General MAXEY arrived in the Indian District, accompanied by his adjutant general and his aid, and established his headquarters in the country house of SAMSON FOLSOM, about one mile from Fort Towson and near the Indian village of Dooksville. The Indians had fallen back to the line of Red River, and were in refugee camps along that stream and the Blue River; only a few of the Indian troops were in camp, the men being with their families among the refugees, and General GANO'S brigade on duty somewhere about the Line Road.

General MCCULLOCH, commanding the Northern Sub-District of Texas, had issued orders to the people of his district that if the enemy advanced from Fort Smith, they were to fall back to the interior of the State, burning and destroying everything that would benefit the enemy which could not be carried or driven away. As a consequence of this order, gloom and despondency prevailed throughout the district. The causes that to some extent created this depression were, however, the means of protection; the fearful cold and snow preventing the Federal forces from moving.

Quoting from a letter written about this time by General MAXEY to the Department Commander, he said: "It will be needless for me to say, I had to do the best I could with means wholly inadequate to the task imposed. I found the army demoralized and disorganized, and drawn back to Red River, where Nature has presented no line of defense." Notwithstanding the disadvantages with which the General was environed, within a few days he was fully informed as to the number, place and condition of his command, what supplies were on hand, what needed, and where obtainable. But few staff officers have worked harder, or more cheerfully, than those of the Indian District.

In a short time the weather grew warm, the snow was gone, and as the roads improved the results of General MAXEY'S energy and activity became apparent. The people in the counties in Texas, along the Red River, well acquainted with his ability and integrity, came forward tendering wagons and teams to haul supplies. General MCCULLOCH, recovering from the slough of despond into which he had fallen, seeing the improving condition of the Indian District, coöperated with General MAXEY; the refugees and troops were satisfactorily fed, and the whole country took on a more cheerful and hopeful tone.

Whilst passing through Texas en route to his command, General

MAXEY learned how the Indians were depredating along the frontier; and being informed, after arriving in the district, that there would be a grand council shortly held at which there would be a plan proposed by the United Indian Nations, whereby peace and friendship could be established between all Indians, and to win them to the side of the Confederacy, the General determined to be present at the council and so wrote General SMITH; In reply he approved the plan of visiting the Indian council, and earnestly desired him to do all in his power to cheer and encourage them.

The council met on the first day of February, and General MAXEY in his speech, in substance, told them that he was present with them in council at the request of the Department Commander, and as ex-officio superintendent of Indian affairs, commander of the Indian district and as a citizen of Texas, the frontier of which joining that of the Indian country all along its border, the interests of the two peoples were identical. He then told them that in compliance with their request made to the Confederate Government by their council held in November last, and conveyed by their delegates to Richmond, the President had directed the present District Commander while still east of the Mississippi, that when he reached the Indian country, he was to assure the people of the Six Nations that every stipulation of the treaty between the Confederate Government and the Indian tribes should be sacredly observed and carried into effect. That Major LEFLORE, their agent, was on his way from Richmond with arms specially designed for the Indian District, and that Mr. SCOTT, Commissioner of Indian Affairs, would soon reach the Indian country with funds to pay their annuity, and other moneys due the Indians. He then referred to the purpose of the council to treat with the wild Indians of the mountains and plains, approved of their plans and advised the propriety of widening its scope, so as to include Texas and the Confederate States, each of which would send delegates to the great council, and troops to secure safety should anything go wrong; would furnish beef and supplies to feed the Indians while in council, and presents for distribution in the event of a satisfactory treaty being concluded.

The speech was listened to with close attention and was well received. General COOPER, who had long been Indian agent before the war, said: "It had a most excellent effect." MOTY KANARD, chief of the Creeks at the time of the treaty, and by a secret clause, a colonel of cavalry for life, asked to have a "copy of the noble address made us on the 5th instant," stating he "would like to have it written out and have it interpreted so they may all understand it thoroughly."

The day the council convened at Armstrong Academy, Colonel W. A. PHILLIPS commanding about 300 renegade Indian infantry and a portion of the Fourteenth Kansas Cavalry under Major WILLETTS, left Fort Gibson on a raid through the Indian country. A few days after, on the Canadian, the Seminole battalion with inferior numbers, fought the cavalry, and were worsted, Colonel JUMPER losing eleven men. The expedition made but little impression on the country, and none on the deliberations of the council, and after committing some outrages on defenseless Indians, fell back to Fort Gibson, STAND WATIE pursuing with the Cherokee Brigade.

When the Union land and naval forces entered Red River and captured Fort De Russy, the attention of the Commanding General of the department was given alone to that expedition. All troops that could be spared were hastily concentrated on the line of Red River. The Confederate forces that had been guarding the coast of Texas, were replaced by the militia from the north and west frontiers, leaving both unprotected. General STEEL, before moving out from Little Rock to form a junction with General BANKS in his movement on Shreveport, called in all available troops from Fort Smith and the upper Arkansas River, and this relieving the pressure on the Indian District. General MAXEY was ordered to report with his command to General PRICE, then in front of Camden. A treaty stipulation, exempted the Indian troops from being taken out of their own country, but on this occasion they voluntarily rode away with the white brigade, and did excellent service in the engagements at Prairie D'An and at Poison Springs.

The removal of the militia from the frontier, which was soon known, opened wide the door for the Indians to enter Texas, and they were not slow to embrace the opportunity.

Early in May a heavy raiding party of Indians came in near the forks of Red River, heading in the direction of the Concho, depredating as they went. About Rio Hondo two citizens were killed, and in the neighborhood of San Antonio, Captain WALLACE, an old Texan, and one of the most skillful Indian fighters, was killed. A few days previously to this a party of Indians, in the same neighborhood, killed three men and drove off a large number of horses. These occurrences were not confined to Texas alone, for while the Indians were making these thieving and murdering incursions into Texas, General POPE, U. S. Army, was making preparations for an active, aggressive campaign so soon as the horses could subsist on

the grass, against the Cheyennes, Arapahoes and hostile bands of the great Sioux tribes in Nebraska, Colorado, Wyoming and Montana, who were raiding the frontiers of Minnesota and Iowa, and were, by murder and robbery, obstructing the overland emigrants on their way to the gold mines of Idaho.

General SULLY, the officer entrusted with the details of the campaign, was directed to concentrate what forces he had at Fort Pierre on the Missouri River; from there move up to the mouth of Bordache Creek, where he would be joined by a large cavalry force and some light batteries. While these preparations were being made, General SIBLEY, with a body of infantry, was sent out to establish posts along the emigrant routes. The arrangements being completed, the cavalry moved out, sweeping the country, killing or driving all hostiles beyond the line of posts. Many bands of Indians, however, slipped through or around the flanks of the driving force and fled south, where they found some buffalo grazing on the great plains of the Llano Estacado, that furnished them food, and the grass forage for their ponies, and the unprotected frontier of Texas an inviting field for their predatory incursions.

After the battles of Mansfield and Pleasant Hill, General STEEL evacuated Camden and returned to Little Rock, fighting on his way the bloody battle of Jenkins Ferry, and took up his old position in defense of the line of the Arkansas River; and the Indian and white troops withdrawn from the Indian District, returned to the Territory. Shortly after, the Six Indian Nations met to select a suitable messenger to send out to the wild tribes, as provided for in February.

After the preliminaries of lighting and smoking the pipe, they chose TUK-A-BA-TCHE-MIKO, a Creek Indian, as their runner, and gave him directions to go west as far as the Rocky Mountains, and north as far as he could in safety, visiting all the tribes and inducing them, if possible, to send delegates to the great peace conference to meet May 1, 1865, at a designated point on the Arkansas River.

TUK-A-BA-TCHE-MIKO started on his long journey about the middle of September, passed north into the countries of the Big Osages and Pawnees, then southwest to the Iowas, Kickapoos and Pottawatomies, thence to the Wichitas, Kiowas, Comanches and Apaches; from there he turned north and smoked the pipe with the Southern Cheyennes and Arapahoes. Thence crossing the panhandle country of Texas and the border of New Mexico, he met in the grassy valley of the Rio Pecos the Navajoes and Mescalero Apaches, Northern Cheyennes and the Uncpapas, Teton and Yankton bands of the great

Sioux Nations, with some Sisseton and Cut-head bands of Sioux, who had slipped away or refused to surrender at the time STANDING BUFFALO and SWEET CORN made a peace treaty with the United States authorities at Fort Abercrombie in March.

It is evident that General SULLY's campaign rendered very much easier the mission of TUK-A-BA-TCHE-MIKO to the northern Indians, as great numbers of them were found ranging over the hunting grounds of those Ishmaelites of the desert, the restless, roving, thieving bands of the wild Commanches and Apaches of the western plains.

At irregular intervals the messenger sent in runners with little sticks tied in bundles representing the tribes and bands with whom he conferred, and whose promise he had to attend the council. At length these messages were no longer received. TUK-A-BA-TCHE-MIKO had passed into New Mexico, Arizona and up along the head waters of the Rio Grande, the San Juan and Grand Rivers in Colorado. Several months passed without intelligence from the messenger, and hope had given place to regret at his supposed loss, when one spring day in early March, the hearts of the Indians were made glad by the return of TUK-A-BA-TCHE-MIKO with many bundles of little sticks, showing he had the promise of one hundred and sixty tribes and bands who would join in conference the Six Confederated Indian Nations, with the design of forming a peace treaty among all Indians.

The result of the action of the Six Nations in securing the promised attendance of so many of the wild tribes decided the Confederate authorities to send delegates to the council, and commissioned a gentleman of Arkansas, named W. D. REAGAN, and Brigadier-General J. W. THROCKMORTON, of Texas, as delegates, and JAMES PETTEGREW, as Secretary; THROCKMORTON was chosen specially to represent Texas. A more judicious selection than that of THROCKMORTON could not have been made, his whole life having been marked by sound judgment and prudence; he was endowed with the faculty of quickly discerning and dispensing justice; had grown to manhood on the frontier, and was well acquainted with the chiefs and principal men of many of the Indian tribes, and familiar with their manners and customs.

A demonstration made by the Federals on the coast of Texas, in March, necessitated a rapid concentration of the Confederate forces near Houston, in readiness to repel the threatened invasion. General MAXEY, with the white troops in the Indian country, was also ordered to that place, leaving General COOPER in command of the district.

The representatives of the Confederate States, the delegates of the Six Confederated Indian Nations, the chiefs and principal men of the friendly Indians in the Territory, with transportation and supply trains, a large herd of beef cattle, and a motley throng of squaws, children, ponies and dogs, that always accompany the Indians, except when on the war path or a thieving foray, with Captain TODDY's troop of Colonel BOURLAND's cavalry regiment, as a rear guard, marched out from the rendezvous at Fort Wachita, one bright morning in April, and took its way across the treeless prairie, following the guides to the northwest, the direction of the council ground, high up on the Arkansas River.

At Cherokee-town, Colonel ADAIR, commanding the Second Regiment Cherokee Cavalry, joined the expedition as escort. While in camp at this place a council was held to determine the manner of proceeding when treating with the wild tribes.

Upon the arrival of the expedition at the Canadian River, the Big Osage Indians, under their chiefs, BROKE ARM and BLACK DOG, were detached and sent forward to scout to the front and right flank of the marching column and ascertain if the country was clear of Federal troops, as it was possible they had gained knowledge of the meeting and had taken measures to disturb the council. The command awaited here the return of the scouts, who, after a few days, reported a Federal force on the north side of the Arkansas, and the river bank full of water. A Union soldier, caught on the south side, was killed and scalped.

The presence of the Union troops on the Arkansas made it necessary to change the place of meeting, and a council ground was selected south of the Wachita River, where the expedition went into camp along that stream, and ESSA-HA-BA, a chief of a band of wild Comanches, who, from boyhood, had roamed over the vast, treeless, and almost waterless desert, and was familiar with every trail and water-hole on the Western plains, was sent out with a party to meet and direct the approaching Indians to the new council ground.

The wild tribes soon began to come in—warriors, old men, squaws with pappooses strapped to their backs or in curious pole contrivances drawn by ponies, children, ponies and dogs, continued to arrive for several days, and passing below, pitched their lodges along the river bank. ESSA-HA-BA at length returned, having in charge a band of Uncompaghre Indians from the borders of Colorado, and reported the Indians all in. Stretching down the Wachita for two or three miles, were gathered over 20,000 Indians, probably a greater number than had ever before assembled for peaceful purposes. Out over the wide prairie, grazing under the care of herders, were droves of beef cattle and multitudes of Indian ponies.

Back a little way from the river the ground rose slightly, forming a kind of knoll, the crest of which for several acres was level, and covered by a grove of wide-spreading post oaks, forming beneath their leafy branches a dense shade all day long. This grove was selected and cleared and cleaned out specially as a meeting place for the council, and here in the morning the council met. The chiefs and principal men of the various tribes and bands assembled, and as they arrived, seated themselves in circles, grouped according to their respective nations, with their interpreters in front, all facing to a common center. On one side, a space was reserved for the white commissioners representing the Confederate Government. At a respectful distance outside sat, or stood, the few white men and the numerous bands of swarthy natives who had followed the delegates to the council.

Much gravity and decorum and a profound silence prevailed as TUK-A-BA-TCHE-MIKO, the Creek, entered the circle, provided with some dry sticks, and kindled a fire. As the smoke ascended, he commenced an invocation to the Great Spirit, to assist with his presence the purpose of the council; to fill their hearts with kindness and their minds with wisdom; to direct and guide their footsteps in a straight and broad path leading to peace and lasting friendship. As the smoke died down he filled, from a pouch at his side, a large pipe, and lighting it with the fire he had made, took three puffs and passed it to the white delegates, each of whom did the same, and so it went through the entire assembly. This ceremony occupied several hours, and when concluded the council adjourned for the day.

When the council met next morning, Commissioner THROCKMORTON presented the synopsis of a treaty for the consideration of the delegates, which he stated, would, if adopted, and its provisions afterwards adhered to, have the happy effect of preventing, in the future, depredations and bloodshed, not only between the whites and the Indians, but between the different nations and tribes of Indians themselves.

The first article of the treaty stipulates: "That all white captives in possession of the Indians shall be restored to their friends, except the captives themselves choose to remain with the Indians. The like obligation to be observed on the part of the whites with Indians held by them." Under this agreement there were surrendered twenty-three children, boys and girls, who had been carried away

by the Indians in different incursions into Texas. One girl in their possession, the daughter of German parents, not being present, was restored later in the summer.

Another article of the treaty provides: "That all Indians named in the treaty shall hereafter abstain from marauding incursions into Texas. Should bad men among them commit a wrong or depredation upon the person or property of any one, a citizen of the Confederate States, and at peace therewith, they will, on proof made, deliver up the wrong-doer to the Confederate States, to be punished according to its laws; and any one, a citizen of the Confederate States, who commits a wrong upon the person or property of any one a member of a tribe mentioned in the treaty, shall, on proof made, be in like manner punished in accordance with the laws of said Confederate Government."

There were other articles regulating intercourse between the various Indian tribes and for adjusting difficulties that might occur between them, and between the Six Confederated Nations and the wild tribes, particularly referring to the Indians, all of which were arranged to the satisfaction of those specially interested, but when the commissioners on the part of the Southern Confederacy proposed inserting an article into the treaty that the Indians were never to cross to the south side of Red River, Commissioner THROCKMORTON giving as the reason for the adoption of the article, "that the people of Texas could not distinguish one Indian from another, as they all dressed and looked nearly alike; that if the Indians making the treaty would adopt the article, the people of Texas would know when they saw an Indian south of that stream that he was an enemy and not a friend, that it would avoid mistakes and prevent collisions with friends."

Commissioner THROCKMORTON, when a member of Congress some years after, in addressing the House, in Committee of the Whole on the state of the Union, and having under consideration a bill making appropriation for the expense of the Indian Department, made use of this incident in illustrating a point in his speech, and said:

"With one voice the chiefs participating in the council protested against this proposition. The debate *pro* and *con* on both sides was long and animated. Finally one of the prominent chiefs, of fine form and feature, of dignified mien, with great gravity addressed the Confederate Commissioners and the chiefs of the civilized tribes who sat in counsel with them, and said:

"'My friends, when the Great Spirit created the white man, He endowed him with qualities different from those He bestowed upon my people. He made the white man to labor with his hands, to cultivate the earth and make it produce corn and wheat for his subsistence. He created him with power to turn streams of water on thirsty valleys, to enrich and vivify the soil, so that he would not only reap abundant harvests but beautify his home. He gave him an inventive genius, so that he could build houses, create villages, and rear great cities. He endowed him with the faculty of making all kinds of tools and implements with which to build houses, cultivate the soil, and erect great workshops. He gave him power to catch the lightning's flash, and with it talk to his friends in distant places; to build great wagons that breathe fire, and force their way with the speed of the wind across the plains, through the valleys and over the mountain tops. These things I have not seen with my own eyes, but my brothers who have been to see the Great Father in Washington, have seen them.

"'Your people build ships that cross the great waters and visit the people of strange lands; you make the most terrible and destructive weapons of war. The Great Spirit gave you all these qualities, and gave you the rich spots of earth where the rains fall, and made for your use cattle, horses, sheep, hogs and fowls. But, my friends, when He created the red man, He made him for a widely different purpose, and gave him only simple and untutored habits. He did not intend him to labor with his hands for support. He filled the rushing waters from the mountains with fish, and made the deer, the antelope, the bear and the buffalo for his support. Instead of making him with a genius like the white man's, to be devoted to the art of peace, He created him with simple tastes and war-like instincts, that he might live by the chase, by war, and by violence. He taught him to live by stealth, and to take from his enemies by force whatever he wanted. For generations and ages back, far beyond the memory and tradition of our people, we have been brought up to the belief that stealing is right; and the more scalps we take from our foes, the more prisoners we capture, the better and more inviting will be the hunting grounds to which we go after death. The Great Spirit made for our use the wolf, the bear, and the buffalo; their meat supplies us with food, and their skins with raiment and material for our wigwams. He gave us these boundless plains from the mountains to the Rio Grande, as our domain upon which to roam, where there are no forests, and where the rain seldom falls.

"'When the cold winds of autumn blow and the leaves begin to fall, the buffalo leaves the great lakes and the mountains and travels south, crossing the Missouri River, the Platte, the Arkansas, the Canadian, and Red River, and continues south to the waters of the Brazos, the Colorado, and the Concho, where the winds are soft and the grass green, and there remains until the warm days of spring approach; and then he takes up his march northward and pursues it until he is again upon the waters of the Missouri and Mississippi.

"'As we cannot live in the north in the winter and without the buffalo for support, we are compelled to travel with them as they journey to the south or north; therefore, if we were to sign this article in the treaty, as you desire, and agree not to go south of the

Red River, when the buffalo reaches that stream in his southern march he would know nothing of this treaty and such a promise, and would cross over and disappear from our view, while we and our squaws and little children linger, and shiver, and starve on the northern bank through all the cold months of winter.

"'My friends, I hope you will see this plain and simple statement of the truth, that your proposition involves a question which to us is one of life or death. We are to-day making a treaty of peace and friendship with you and with our red brothers of the woods here. We propose to make a great white road of peace between your country and our country, where there shall be no more briars and brambles, no more stains of blood and bleaching bones; but a broad, clean road of peace, as white and pure as the snow from the sky.

"'We have invoked the Great Spirit to fill our hearts and your hearts with the desire for peace, so that this good end may be accomplished. We hope the Great Spirit will incline your hearts not to press this proposition, fraught with so much mischief to our people. We are making peace with you and our brothers, and will not steal your horses and mules, capture your women and children, or murder your people any more; but we cannot live except by stealing, by war and violence. We have been stealing from the people of Mexico, killing their people and capturing their women and children always. Our fathers, and their fathers before them, did it, and we must continue to do it.

"'We cannot get to Mexico without crossing Red River, and to tell you the truth, my young men are now eager for the war path, and hungry for horses and mules, and as soon as we finish this treaty with you and our friends here, we are going directly to Mexico.'"

The speech was written down as spoken, by McCLASKEY, a discharged U. S. soldier, who had lived many years among the Indians, and was interpreter for TOSH-A-WA, a chief sitting in the council. The impression created by the speech was so profound and striking that the Confederate Commissioners no longer pressed the proposition. It being withdrawn, the council proceeded harmoniously to the work in hand, which being soon finished, duplicates of the treaty were made and signed, and exchanged in the most ceremonious and impressive manner.

This being accomplished, the Confederated Indian Nations and the Commissioners of the Confederate States, giving the presents selected Major VORE, and the wild Indians chose MI-O-WA, a Comanche chief, to make allotment of the presents to the one hundred and sixty chiefs of the wild tribes who had participated in the peace treaty. Seven army wagons, closely packed, were loaded with presents, consisting of blankets and such articles and trinkets as it is customary to give Indians on like occasions.

The distribution was so equitable that general satisfaction was secured, and the purpose of the council having been accomplished, the wild tribes pulled down their lodges and quietly went back to their hunting grounds on the Western plains, the Confederated Indian Nations to their homes in the Territory, and the troops to their stations.

Whilst the transactions mentioned were being enacted in the country of the Indians, not a whisper was heard of the stupendous events of that Sunday in April at Appomattox; not a rumor of the meeting near Durham Station, that 27th day of April; not a word of the surrender of the Trans-Mississippi Department to General CANBY on May 26th; not the slightest intelligence reached the council grounds that the Confederate armies had surrendered, the troops been disbanded and the war concluded, and that the Confederate Government was a tradition, a memory, a thing of gray and glory forevermore.

On the return of the Commissioners to what had been District Headquarters, finding no authorities to whom to report, General THROCKMORTON, on his return to Texas, made deposit of the treaty papers in the State Department at Austin.

The benefits secured to Texas by the peace conference were not lost by the overthrow of the Confederacy. The Indians, mindful of the stipulations of the treaty, ceased their depredations along the border for many months, and peace and quiet and a feeling of security prevailed as never before. The returned Confederate soldiers seeking new homes, took advantage of this and moved out to the cheap, fertile lands of the West. The disbanded soldiers of the Union army remembering with delight the soft winds of the south land and the fair faces of the daughters of the sunny clime, came to Texas by thousands, and settling on the rich lands of the frontier, peopled those counties with a brave, robust class of immigrants, inured to toil, and being fitted for it by their soldier life, made the border land safe against marauding incursions of bad Indians, until at length General CUSTER, penetrating the Indian country, fought the Kiowas and Arapahoes, killed some two hundred of their warriors and captured several hundred of their women and children, who, for a time were held as hostages; since when there have been no Indian troubles on the frontier.

The result was, that Texas rapidly recovered from the evils of the war. No State in the restored Union made such continuous and rapid development. Line after line of railroad was built, city after city was built where a human habitation before was unknown,

where the morning dew on the rank grass wet the knee of the rider as he crossed the prairie. Towns and villages, and wide spreading farms sprang into existence as if by magic. The thousands of the days of the treaty, have grown to three millions of prosperous and happy people.

NAPOLEON after having defeated and destroyed five of the choicest armies of Austria, was driving the remnants of the last one back under the walls of Vienna. In proposing to Arch Duke CHARLES the preliminaries of the peace of Leoben, he said: "With respect to my own feelings, General, if this proposition should be the means of saving one single man's life, I should prefer a civic crown so merited, to the melancholy glory attending military success."

CONVERSATIONS ON CAVALRY; BY PRINCE KRAFT ZU HOHENLOHE-INGELFINGEN.

TRANSLATED FROM THE GERMAN
BY FIRST LIEUTENANT CARL REICHMANN, NINTH INFANTRY.

SECOND CONVERSATION. (NOVEMBER 20, 1885.)—OF THE TRAINING OF THE RECRUIT IN THE TIME OF FREDERICK THE GREAT.

H. You promised to answer the many questions which arose in my mind after our last conversation. First of all, I ask you to inform me of the principles governing the individual training of FREDERICK'S cavalry. I was unable to find any regulations or book in which they are laid down.

S. I believe you. For an art cannot be taught by written instructions. Its limits may be fixed. Within these limits one must be skilled in it, because it is an art. He who is skilled in it, illustrates it by word of mouth and example. The schools of art are live schools only, teaching from mouth to mouth, from eye to eye. Science may be acquired from books alone: not so art, and the art of riding no more than that of painting.

H. Were all the horsemen of FREDERICK THE GREAT artists in riding?

S. Certainly not, if thereby we mean the high school of equitation; but the art of campaign riding, which differs essentially from that of school riding, was highly developed.

H. Then you do not think school riding essential for campaign riding?

S. That is quite another question. I might say yes or no. School riding forms the foundation of everything necessary for campaign riding. Yet it is not necessary that every good campaign rider be a good school rider. Still less necessary is it, that every good campaign rider should know how to train a horse for school riding.

H. Please make this plainer. With us every horseman is taught, in his second and third year, how to make a horse obedient and how to put it to work.

S. Just there is the great difference between the modern principles of training and those of the Great King.

H. How was the individual training conducted then?

S. I confess I find it difficult to begin, for I do not know whether to begin with the man or the horse. For the man is put on a trained horse to become a good rider; the horse is trained by a good rider to become a good horse.

H. That is the story of the egg and the fowl. Which one was first, the fowl that laid the egg, or the egg from which the fowl was hatched?

S. Correct! Let us begin with the man. In those days the recruits were put on the best trained and best tempered horses.

H. That is also done at the present time.

S. It is, as far as practicable, but on account of the short term of service the number of our recruits has increased, while that of well trained horses has decreased.

H. That brings us back to my former remark, that the short term of service prevents us from equaling our forefathers.

S. I state again that later on I shall explain to you my ideas as to how the demands on cavalry may be met in spite of the present term of service.

H. All right. In order not to move in a circle let us confine ourselves to the principles of individual training at the middle of the last century.

S. Agreed. It was the endeavor then to teach the recruit how to ride well on a well trained horse. It was not at all the intention to teach every rider how to train horses; it was sufficient if he learned how to sit well and firmly on a trained horse, ride in ranks, use his arms, and have confidence in the ability of his horse, ride across country, and know how to rally quickly when the ranks were disordered.

H. Is it not a requisite of a good rider to know how to break a horse?

S. That is exactly the error of the present time; it is not absolutely required of a good campaign rider.

H. But must not cavalry be able to break and train their own horses?

S. The cavalry yes, but not every cavalry man; I can name you many excellent campaign riders of the present time, who never learned how to break a horse. Look at all the members of ruling houses, who have prominent places in the army; they are, almost without exception, excellent and bold riders, exemplary campaign riders, and, I am inclined to assert, that none of them ever had time to concern himself with the training of unbroken horses.

H. These gentlemen have equerries who break the horses for them; but you cannot detail an equerry to every recruit.

S. In a certain sense you can; from the old, trained riders, those showing special aptitude are to be selected and trained as remount riders, who break the horses for the troop; that is what was done in those days.

H. And it is done to-day also, to a certain degree.

S. Only with this difference, that all the other men also are taught to dabble in breaking horses. This is plainly not only unnecessary, but injurious.

H. Nor were all the horses perfectly broken in those days.

S. It certainly also happened then that a rider who had gained some proficiency was given a horse which was imperfect in its gait, and had no incurable faults. But when the rider has once acquired a certain degree of efficiency on a good horse, he will gradually learn how to manage a less obedient horse, to put up with its faults, although unable to break the horse of them. Look at many of the above named distinguished gentlemen: they finally, without having become riding masters, tamed quite difficult horses sufficiently for use.

H. Let us return to our recruit. In those days he learned on a trained horse how to ride. What was demanded of him when presented for inspection?

S. We are not so far yet; there was no such thing then as presenting the recruit for inspection. Of this, however, hereafter.

H. How then were the recruits trained?

S. We ought not to say "the recruits," but "the recruit," for there were no squads of recruits as we understand them, in the cavalry of FREDERICK THE GREAT, in times of peace.

H. It is true, there were few recruits then. MARWITZ who joined the regiment of gendarmes on January 2, 1790, estimates the average number of recruits for a "company" (half a troop), of seventy-five horses and sixty-six privates, at eight per annum; hence it would seem that on an average every man served ten years. For a troop therefore, numbering 150 horses, including non-commissioned officers, some sixteen recruits must have been enlisted annually; that would still give a squad.

S. We may assume that under FREDERICK THE GREAT the per-

centage of recruits was still smaller, for the horsemen made the soldier's trade their calling; therefore, unless great losses in battle called for a large number of recruits, it is probable that the troop of 150 horses required annually, at the most, ten or twelve men. Losses in battle were, however, not fully replaced, for during the Seven Years' War the King's cavalry became greatly reduced in numbers; finally its quality suffered also, on account of large additions of recruits, of which the King complains.

H. Let us then assume ten or twelve recruits per troop, irrespective of the fact that there were troops of as many as 200 horses.

S. Very well. Let us assume ten or twelve. But they did not join the troop together on a fixed date, but were enlisted as required. Thus the recruit, or two or three, were turned over to an old, trusty non-commissioned officer for instruction. He taught them how to ride, instructed them in the use of arms and the details of the service, and when the non-commissioned officer reported the instruction completed, they turned out with the troop.

H. MARWITZ states that at the beginning of 1790 he first did duty, and then drilled with the troops at the end of March.

S. It is probable that things went as quickly as that with a young nobleman who had learned some riding before joining. The instruction of the ordinary recruit must have required more time.

H. In his professional opinion on cavalry MARWITZ assumes for the last decade of the past century, that the man was a recruit for two years.

S. I do not think that it was quite so long before he drilled with the troop. But the main thing is that the recruit learned to acquire seat and touch on a perfectly broken horse. He who receives his first instruction in riding on a horse not thoroughly broken, imbibes with the mother milk, as it were, faulty habits.

H. That is easily explained; for if a horse fails to respond to the proper "aids," the beginner at once substitutes faulty ones.

S. You speak of aids much too soon. The first thing a rider has to learn is the seat. Upon a proper, firm, secure seat, depends the rider's independence of the motions of the horse. Only he who has learned how to sit, and to sit correctly, is able to use his lower thigh at will and as ordered, in handling the reins as well as the arm. Only he who sits correctly is able to use his lower thigh as he wants to, and as he ought to.

H. That is plain. For he who has no seat, but holds on with his hands by the mane and with the heels by the flanks in order to not fall off, can neither handle the reins nor apply his legs as a rider should do.

S. That is an extreme case, but it illustrates the many shades of this kind of thing. It would therefore be desirable, if practicable, not to instruct the beginner in the use of the thigh and reins, nor to allow him their use until he has learned to maintain a correct seat at all gaits.

H. How could that be done?

S. Only by the use of the longe, and by not putting any reins in the hands of the beginner. But the same result can be gained approximately, by requiring, in the beginning, until the seat is firm, a steady position of the hand and normal slope of the lower thigh, and by not saying anything of the management of the reins or application of the lower thigh, until the seat has become firm.

H. In that case the horse could run away with the beginner.

S. It is not so bad as it would seem. Only the horse must be well trained, for even the seat alone can be taught the recruit on a well broken horse only, which shows a faulty seat by wrong motions, so that the rider only feels secure when he has the proper seat.

H. Then you require for every recruit a horse perfectly trained in the school of equitation.

S. That would be neither practicable nor useful; for horses too nicely trained would play all kinds of tricks induced by the involuntary and unconscious actions of the rider. For the campaign rider a horse well broken to campaign riding will do.

H. Then you do not think a too nicely trained horse adapted to campaign riding?

S. A horse trained only in the high school of equitation cannot well endure the long gaits of campaign riding.

H. Then you think that for campaign riding the high school can be dispensed with?

S. The high school will ever be the basis of the principles of the individual training of cavalry. A cavalry that has no school horses at all gradually loses sight of the proper course of horse breaking and instruction in riding.

H. How many school horses per squadron would you think necessary?

S. Not a single one per squadron; for it cannot have a rider that can ride according to the high school. School horses should be kept only in the Central* Riding School, the only place where the

* The author here refers to the riding school at Hanover, which has the designation "Central Riding Institution."—[TRANSLATOR.

knowledge of proper "aids" in riding is to be developed to the highest perfection in some specially gifted riders; but there at the Standard Institution the high school must never cease to be cultivated.

H. I enticed you into a digression from our theme. We had come to the point that the recruit must, in the first place, learn how to sit before he is made acquainted with the uses of the thigh and rein. He must learn them afterward.

S. Not for a long time yet. He must learn how to turn to the right and left; he must learn how to drive the horse forward with his thighs; how to hold him back by the reins; he must learn how to ride at the three gaits—walk, trot and gallop (in this instruction it would, at first, be a matter of indifference whether the horse galloped to the right or left); he must learn how to stop him, rein him, back and support him. He must thus learn to employ the thighs and reins as a kind of conventional language spoken to the horse, but he must not regard them as the *science* of the "aids." That is all he needs in the ranks and in the field; and when he has learned the use of arms, he is ready to drill with the troop.

H. Do you mean to say that in the cavalry of the Great King the recruit was so soon put into the ranks?

S. I am sure of it. Under SEIDLITZ he was put between two reliable men, who would "cuff" him into his place, if he could not manage his horse. Tradition also has it, that SEIDLITZ put the least courageous, *i. e.*, the youngest recruits, into the front rank. The old soldiers in the rear rank had to watch them and drive them forward, if in the charge they did not ride fast enough, by "tickling" them, if necessary, with their sabers. This, it is true, was a little harsh, and would hardly be allowed at the present day.

H. But MARWITZ says that in his first drills he rode in the rear rank. I am always quoting MARWITZ, because he is the only one from whom I could find out anything of the interior service of the cavalry of the last century. He also states (vol. I., p. 46) that in his first charge his horse bolted through the front rank, past the officers and went to "the devil." "I deserved the flat of the saber," he says, "but fortunately escaped with being laughed at."

S. A fourteen-year-old child could not very well be put in the front rank, and an exception was probably made with such a young nobleman. You may infer from this, however, how rarely then a horse bolted, if the rider got the "flat of the saber" for it. (I refer to my statement in our last conversation, that in those days the horses did not bolt.)

H. But were they not rather liberal with the "flat of the saber"?

S. Less than is generally supposed. There may have been exceptions. Generally they were humane, kept in view the well-being of the subordinates and observed the prescribed rules.

H. What did the recruits do when sufficiently advanced to drill with the troop, which seems to have been practicable after six months' drill? But MARWITZ speaks of recruits of two years' service, and says that they rode one hour daily.

S. These statements of MARWITZ prove that in the last decade of the century the cavalry no longer strictly adhered to the principles of FREDERICK THE GREAT. For the Great King demanded two hours of outdoor exercise, daily, for every horse. Even on Sundays the horses had to have their outdoor exercise before church, under the first sergeant.

H. But they did not drill out of doors every day, winter and summer. Hence they must have ridden for some time in the riding hall or in the ring.

S. The King says: "The day is lost, on which the rider has not exercised his horse." This exercise was devoted to individual riding. The King laid great stress on it as a prerequisite for rallying. In this kind of riding the trooper learned how to turn his horse in all directions at all gaits, how to clear obstacles and go over uneven ground at full gallop, and how to use his arms without losing his seat. He said: "Whoever cannot stand a long gallop, is not an efficient cavalryman."

H. Then it seems to have been the custom to always sound the rally at the end of this individual riding.

S. Not only that, but the individual riding was also practiced as essential for rallying quickly. For he who, at any time and under all circumstances, can quickly put his horse in motion at any gait and in any direction, can get quickly to the place designated for rallying.

H. It must be clear to any one, even if he has never been on a horse himself, that cavalry capable of rallying quickly, is worth twice or three times as much as one, which, after the first charge, is out of the leader's hand for the rest of the day. For this reason the King directed that after every closed charge the command to disperse be given, "not that it should be done in the face of the enemy, but that it be explained to the men that it was done only for practice in rallying. For, after contact with the enemy, the rascals will always be dispersed."

S. On this point then we agree. But rallying must be practiced

daily and not during drill only, otherwise these principles will not become second nature to the men. At first it was thoroughly practiced on foot, especially by those riders (recruits) who were not yet sufficiently masters of their horses to do it mounted, merely to teach them what direction to take. When rallying is practiced in the drill season only, it is too late and the work is thrown away.

H. I suppose there are a good many things besides charges that will throw cavalry into disorder?

S. Certainly; and in such cases, it is very important that the cavalry should rally quickly and be ready for action. A troop which can rally quickly has confidence in itself, and the leader in it, for he knows that he can rely on his troop. It fosters enterprise and boldness in the charge. Do you think that ZIETHEN at Rothschloss, in 1741, would have ridden across country; that the cavalry at Hohenfriedberg would have crossed the Striegau in the face of the enemy; that SEIDLITZ at Zorndorff would have dared to break his whole mass of cavalry into column of troops riding across country and to pass the deep water of the Zabern, if these leaders had not been confident that whenever the troops became disordered by the ground, order could quickly be restored by rallying?

H. But the drill and manœuver seasons were but a small part of the year. MARWITZ mentions a drill season of nine weeks in the spring, (from March 16th to May 23d), one of three weeks before the special review, one of three weeks in the fall, and there were maneuvers besides, which, including the march to and from the garrison, could not have exceeded three weeks. That makes nineteen weeks. That leaves thirty-three weeks of the year. I do not believe they spent all these thirty-three weeks in individual riding; besides I do not see how supervision could have been exercised over every individual rider.

S. In any case, in the times of FREDERICK THE GREAT, old riders on old horses were never put into the riding hall. This is proven by the small size of the riding halls and rings in those days. However, you must not think that in individual riding every rider was allowed to ride how and where he pleased. The rider was constantly and diligently practiced in leaving the ranks and quickly reaching the place to which he was called. Nor did the rider exercise his horse at will, so long as his training was not completed, but as he was ordered, and for such a time and at such gaits as were prescribed.

H. In that case they must have been divided into classes, each under charge of its own non-commissioned officer or officer.

S. I think so too, and that officers and non-commissioned officers superintended the men of their own squads.

H. There are seasons of the year when outdoor exercise is out of the question. At such seasons recourse must be had to the riding hall and to riding by squads, with distances.

S. It should be made a principle that the covered halls are to be used only for recruits, remounts, and such recruits of the past year, and such horses as are to be trained over again.

The squadron always rides in the open. If the rings cannot be used, if it is very cold or raining too much, the troop simply turns out for horse exercise.

Riding in the hall only leads simply to parade work; riding in the open makes the practical riders we want in the field; riding in all kinds of weather keeps men and horses healthy, makes them hard, and trains them for field service.

There is no lack of interesting exercises if there be a sufficient number of men to form one or two platoons; they may be drilled, practiced in marching, or drilling in single rank, etc. War may break out at any time; how then about the closed riding, the charges, the passage of defiles, and the movements for forming in close order, when even the old soldiers have not been practiced in them for months?

H. I return to my first question: What was done during the thirty-three weeks in which there was no drill, or, if we deduct four or five weeks during which the troops were compelled to use the hall, in the remaining twenty-eight or nine weeks? Only individual riding and rallying?

S. And then, the use of arms and riding across country. You see if the rider, who has learned to sit well and use rein and thigh merely as a means of communicating his wish to the horse, learns in the first year how to ride over uneven ground instead of tormenting his horse in the hall; if he executes on horseback gymnastic exercises, and all kinds of preparatory exercises for the use of the saber without changing his seat or fretting the horse with the reins, he gains more steadiness of seat for work under all circumstances than he would in the hall. The officer in charge must see that the recruit sits easily, feels the reins lightly and uses them seldom, disturbs the horse as little as possible by "aids," and inspires confidence in his horse. The horse of course must be steady, fresh and obedient, then the horse will also gain confidence in the rider, and the oftener they ride across country and clear obstacles, the more practice the horse gets and the better the horseman likes it.

H. That is true; I saw it in the paper chase instituted for very poor riders from the infantry. They finally rode across country previously deemed impracticable for horses, nor did anyone remain behind or meet with an accident.

S. Yes; what all mounted infantry officers can do, the cavalry private must surely be able to learn. It is only a question of getting the necessary time for it, and not spending it in useless, soul killing hall riding, which only serves to make an imperfect rider believe that he is a perfect horseman.

H. Were not these riding squads finally inspected? Certainly you cannot let the officers and non-commissioned officers do as they like for twenty-nine weeks in the year, and go riding wherever they please? There must have been some regular control over their exercises, and a regular repetition of the instruction in the same, and I know of no other opportunity for control and instruction than the inspection. If you wish to control cavalry you must inspect the riding squads.

S. This constitutes one of the principal differences in the interior service of the cavalry of the Great King and our own. Inspections, and very thorough ones too, were also made then, the cavalry was rigidly inspected, but never were riding squads in the hall presented to the inspector in the ring. The hall was considered a necessary evil, and school riding as a means to the end of acquiring campaign riding; the result only, campaign riding, was inspected.

H. Was only the drill of the whole troop inspected then?

S. Oh, no, certainly not; on the contrary, the riding of the individual was then closely watched, but only with reference to his fitness for practical work. SEIDLITZ went so far as to ride alongside some private soldiers when going over difficult country or jumping ditches and hurdles, in order to see for himself how they acted.

H. How much stress SEIDLITZ laid upon the observation of the individual, and how thorough he was in it, appears from the anecdote, that he held a dollar between his fingers as a target for some good shot. The latter had to hit it with the pistol and was then allowed to keep it.

S. And how much stress the King himself laid upon the individual riding I have mentioned above.

H. Then you really think that in those days whole riding squads were never inspected?

S. All I can learn on this point confirms me in this opinion; besides, it is quite rational to have formal inspections of the result of the training only, not of the means by which it is accomplished, because, otherwise, the means is apt to be mistaken for the end, or the end to be lost sight of through too close attention to the means. And here there is a special temptation, in the performances in the riding hall, to engage in some showy tricks, which are hurtful to the horse, spoil the rider, and impair the campaign riding. It is rational therefore to make inspections only of the several units, when the school of the platoon, the troop, or regiment has been completed, but not of the riding squad in the riding hall. In these inspections of the platoon, for instance, the individual riding can be inspected.

H. I cannot imagine that in those days the superiors should have resigned the method of instruction and waited quietly for the result, for, all control over, there would have been danger of having this or that entirely spoiled before necessary connections were made.

S. This the superiors in those days certainly did not do, but they convinced themselves frequently by their own presence, whether the instruction in riding was properly imparted.

H. But that is a kind of inspection too.

S. With some difference! For if the instructor does not know when the superior will be present at the instruction, he cannot get ready for it and prepare a riding exhibition for which he specially drills his men; and this he can do and is bound to do if he knows that the inspection will take place at the end of the riding course previously laid out, and for which he drills his squad as for a quadrille.

H. I should think that whenever the instructor reported a recruit proficient, the superior would have satisfied himself as to the riding of the recruit before giving his consent that he should drill with the troop.

S. That was probably done; but in that case the efficiency of the recruit in individual riding was tried, for you must not forget that the squadron as a completely trained unit never ceased to exist. For if we assume for a troop of 150 horses fifteen remounts per year, which turn out with the troop in the third or fourth year, and twelve recruits per year who turn out after six months' training, there were still at least one hundred horses available in each troop for drill or other purposes). MARWITZ assumed eight recruits for each company, *i. e.*, sixteen recruits per squadron annually. If we assume ten or twelve in SEIDLITZ's time, then there were two recruits assigned to each squadron every two months.

H. That of course would be impossible now, when we receive nearly one-third of our recruits each year, and when, after dismissing

the reserves, the squadron is as good as disbanded and must be reorganized.

S. That is true. We must take into consideration the three years' (or four for the four year volunteers) term of service.

H. And how?

S. I have duly considered this point and made my plans. I shall explain them to you at some future time. The next time let us discuss the training of the older soldiers and training of the horses in the days of the Great King.

H. I'll have a good many questions for you yet.

MOUNTED PISTOL PRACTICE.

By Captain GEORGE PADDOCK, Fifth Cavalry.

THERE is no kind of target practice more interesting than shooting with the pistol, mounted: yet the proper method of attaining proficiency is not generally agreed upon. This fact is due to several causes. We spend too much time trying to learn from the few phenomenal experts, and too little time studying the causes that distinguish the fair pistol shot from the more common poor shot.

The phenomenal shot is a poor one to go to for information. He may not know himself how he manages to make his record: he may know and not wish to cheapen his accomplishment, or he may know and deliberately deceive his audience.

Even if he is willing to impart information, the fact that in all likelihood the first principles came to him easily or almost intuitively, renders it hard for him to understand just what the naturally poor shot has to struggle with. Upon the same principle I have heard it stated that the brightest minds are not generally as good instructors as others less favored.

The latter, remembering their own early difficulties, understand more clearly and may have more patience with the failures of the beginner. Let us look then to the good shots that are not phenomenal.

There can be no question that good riding is a requisite of skillful shooting, mounted. It is noticeable, however, that mounted pistol practice will improve a man's riding much more rapidly than the monotonous movements around the riding school, possibly because something definite is to be accomplished, and if, while improving his riding, we can gradually teach him how to shoot, we will accomplish a double purpose, and eventually turn him out a good rider and a skillful pistol shot.

In a troop of cavalry will always be found a large percentage

of good riders, but among these good riders there will be only a small percentage of good shots. It is my desire to point out the peculiarities of the method of carrying the pistol and moving the pistol arm, common to the good shots, which are not noticeable among poor shots, being convinced that herein lies a most important first principle.

Careful observation reveals the fact that the good shots carry the pistol hand and move the pistol arm with the same ease and grace that characterize the movements of the body and the bridle hand. Horse, man and pistol move in the same cadence; as they approach the firing point the pistol is turned, and pausing a moment, is fired. No jerking or thrusting is seen; no sudden movement alarms the horse.

I agree with Captain PITCHER, that it is a "decided error" to prescribe that the pistol should be projected at the mark and fired without any effort to align it upon the object. As stated by him, "it is open to the same objection that he finds to snap shooting from the hip with the rifle."

There is a further objection to this method of shooting, arising from the fact that the sudden motion of the pistol-hand is invariably terminated by a jerk, which not only frightens the horse, as before stated, but which also imparts to the muzzle of the pistol, at first a downward, followed by an upward circular motion, that makes any kind of aim impossible, and the hit, if made, a pure "scratch."

Having developed, by constant and patient practice, the easy carriage and movements of the pistol-arm, it next becomes necessary to determine a number of minor points, such as the proper grip upon the pistol, the tension of the muscles of the arm, and lastly, the kind of aim that can be taken quickly enough to be uninfluenced by the motion of the horse, and yet accurate enough to hit a target of the size and shape of a man at any reasonable distance.

The grip upon the pistol and the tension of the muscles of the arm are best taught dismounted. While there is some reason to doubt that skill dismounted with the pistol is necessary to skill mounted, there can be no question of the desirability of attaining, if possible, a high degree of proficiency when dismounted and the aim is deliberate. In taking position to shoot dismounted, the feet should be well apart, the left hand on the hip, and the left shoulder well back; in fact, the man should face to the left and fire to the right; this position of the body exposes it the least possible to the fire of an adversary, and it also ensures a firm, steady pose of the body. The pistol-arm extended, but not straight, as in the latter position the

elbow and wrist cannot as easily correct, by slight movements, the unsteadiness of the shoulder and body.

Men often say and think that the reason why they cannot shoot well is because their hand is not steady; this theory is to me absurd. The unsteadiness comes from the waist or shoulder, or both, and is due usually to the strain upon the muscles of the arm and hand. Let a man extend his arm as he would when shaking hands, and his hand will be seen to be very steady. If taught to hold out his arm when pointing the pistol, with as little strain upon the muscles of the arm as he experiences when his arm is extended with hand empty, as in pointing at an object, or as in shaking hands, and he will soon show a marked improvement in shooting.

The grip of the pistol hand upon the stock must be firm, without any strain, the pressure being light, until the pistol is properly aimed, when the lower fingers increase the pressure as the forefinger is applied to the trigger. The position of the hand should be as far down the stock as possible, so that the thumb, in cocking the pistol, can just reach the hammer with its extremity when extended. Men are apt to try to cock the pistol by placing the second joint of the thumb upon the hammer; this not only makes cocking the pistol difficult and awkward, but it leaves the hand in the worst possible position for holding the stock. By grasping the stock well down, the wrist is not constrained, and better results will follow.

It will be noticed that many men will thrust the muzzle down just as they discharge the pistol; this habit can be broken by having them snap the pistol while some one watches the muzzle to see how much it moves.

Captain CUSHING, of the artillery, once devised a very useful little appliance consisting of a small mirror attached to the muzzle of a rifle, which threw a pencil of light upon a shaded wall, to make apparent the "jumping" of the muzzle when the trigger was pulled. A little practice soon enabled a man to hold his piece very still when he snapped it. It was only necessary for him to see that he had formerly habitually moved it at this important moment to enable him to overcome the habit. Some such device would be even more valuable for a pistol, as on account of its size and weight, and further, on account of its being held in one hand, it must be more likely to unconsciously deviate than the rifle.

The length of time that a pistol should be aimed, depends almost entirely upon the pull, and as safety necessitates the pull being far from easy, very quick aiming is not desirable dismounted. With an antagonist also shooting it is better to shoot once with good aim,

than a dozen times with uncertain aim. All attempts at so-called snap shooting is time thrown away. Aiming dismounted should commence the moment the pistol is pointed, and should continue during the interval required to pull the trigger without jerking. The practice of keeping the pistol at the aim for a moment after its discharge is an excellent one and will tend to break the unconscious movement of the muzzle at the time the hand feels the hammer fall. It is at this moment that the pistol is most likely to be moved; the man firing knows that he held just under the "bull," and is usually at a loss to understand why it was not a good shot.

There is more skill in holding a pistol correctly after the trigger is pulled than before. Almost any man can point a pistol at fifty yards and hold it in the four ring until his arm drops from exhaustion. This fact I have frequently established by telling a very poor shot to hold as near the center as possible and to see how long he could keep it there. Such practice is good because it teaches a man how to hold without any strain of the muscles of the arm. This strain, which must be overcome, the man is frequently unconscious of, and it will often be necessary to feel the muscles of his arm and tell him to relax them before he is fully aware of it. The easy carriage of the arm, developed at dismounted practice will aid the man after he is mounted.

Every good rider has experienced the sensation of the perfect ease with which he drops into the motion of his horse; were it *not* so, riding would be a tiresome instead of a delightful exercise. The point I wish to emphasize is, that the man who wishes to shoot well must learn to carry his pistol arm with as much ease and naturalness as he does the bridle hand. After that is learned, comes the question of how to aim. In mounted aiming, I have gotten the best, and in fact, my only good results, by following the methods below: Keep the eyes both open and fixed upon the front sight, with the rear notch held a little below the line of sight; this will make the barrel always visible and prevent any great deviation to right or left; in fact the eyes will follow the direction of the pistol all the time it is being lowered, just as the eye of a billiard player follows the direction of his cue.

The depression of the line of metal below the line of sight should be about one inch at the rear notch; this will insure sufficient view of the barrel referred to above, and will enable the rider to see the pistol and the target at the same time, and to be fully aware of the rate of speed the line of sight is making as it sweeps toward the target, so that he can pull the trigger as it crosses, having applied considerable pressure at its near approach.

While the pistol is at the "raise," and also as it descends to the point, this angle between line of metal and line of sight of which the tangent is about an inch at the distance from front sight to rear notch, should be kept constant. In other words, the same amount of barrel should be visible all the time. In practice it will be found very easy to hold the pistol in this position even while it moves very rapidly.

The main reason why deliberate aim can not be taken mounted, is, that the eye is kept so busy trying to bring both sights into line that it cannot watch the target and observe the rate of approach of the pistol's direction toward it. By keeping an eye upon the front sight only, and depending upon the wrist to hold the rear sight or notch in proper position, the apparent approach of front sight and target is clearly visible, no matter how fast the horse is traveling, and as before stated, the rider can begin to pull before coincidence takes place, and has a far better chance of shooting at the proper moment, as he can correctly gauge the arrival of that moment, just as the ball player can tell the moment when the ball will strike his hands.

The best catcher of the league could not hold a ball with his eyes shut, although it were thrown into his open hands. This method of aiming can be executed so quickly as to seem like snap shooting. It will be noticed that the ball will strike higher than the point aimed at; the rise being about one to ten, is too slight to make any objection to the method. I have noticed that by holding toward the feet of a standing figure, that the hits for ten yards are about the middle, and for twenty and twenty-five about the shoulders. If firing at longer distances of course more allowance should be made or less of the barrel be kept visible at the point and at the aim.

There is no other practice that yields better returns than mounted pistol practice. No one can fail to desire to shoot a pistol well from the back of a galloping horse after once seeing it well done. Almost any plodder can lie down on his back and sight and squint and perspire long enough to be shot a dozen times, and make a reasonably good record with a rifle, but the man who can manage a good horse and shoot at the gallop without picking out a calm day, without a wind gauge, or any other of the many requisites of the record-makers, and can yet make a good score, that man has an accomplishment, not only necessary to a good cavalryman, but one which will excite the envy of any one who may witness his skill.

THE CAVALRY HORSE; INSTRUCTION OF THE TROOPER IN DRILL AND DETAILS OF THE SERVICE, WITH SUGGESTIONS FOR THEIR IMPROVEMENT, ETC.*

BY CAPTAIN J. H. DORST, FOURTH CAVALRY.

UNDER the present system of supplying horses the cavalry horse should be from four and a half to six years old when purchased. He should have considerable school training after purchase, and the new drill regulations for cavalry will probably attach much importance to this point. In learning to carry himself properly, bend his neck, back, passage, pirouette, jump, etc., he goes through what corresponds to gymnastic training for a man, and uses his muscles and tendons in a way that he probably never had to use them before, and a certain amount of elasticity is necessary. A horse seven years old and upwards has his bones hardened, his muscles and tendons set, and has acquired confirmed habits, carriage and gaits. The younger horse will be more docile, will learn more quickly, and a tendency to bad habits or vice can be more readily overcome. The difference in results of putting a five-year-old horse and a seven-year-old horse through the same course of training, would probably be proportionately as great as would be obtained by putting a young man of twenty and another of thirty-five, who had no previous training, through the same course of gymnastics. There is no doubt the younger man would soon improve beyond a point the older could never reach. If the horses were thoroughly trained when bought, of course those eight years old would be satisfactory, but such horses are hardly ever found except in the riding schools in large cities, or in the possession of wealthy men who ride for pleasure, and such horses have a very high price.

The horse I have described will probably cost from $175 to $200, if bought by contract, though his first cost should not exceed $150.

*Extract from report to the Inspector General, U. S. Army, June 5, 1891.

He will have some blood and spirit, and will require intelligent handling. It may be urged that he is too fine and high strung for the awkard and rough-handed men we get frequently as recruits. This is to a great extent true with our present torturing cavalry bit and recruits too old to learn to ride, but clumsy German peasants handle better horses almost to perfection. By enlisting men for the cavalry who are young enough to learn to ride, without short legs, long bodies, and splay feet, and by providing each horse with a bit suitable to his mouth, and giving a proper amount of time for instruction, our more intelligent soldiers ought to do as well as the Germans.

As to the measurement of horses requested, I am not able to furnish them, owing to the absence of nearly two-thirds of the troop on detached service. Some of them, especially the large horses, have grown quite thin with this mountain work, and the measurements of girth would have no value. Nor am I certain that I understand exactly what is meant by the length of the horse. The horse may be long by having a long neck and long body, and still have a short back. A long oblique shoulder will put the point of the breast well to the front. A long quarter, nearly horizontal on top, will put the rearmost point well back from the point of the hip. His body may thus be relatively long while his back is short. So far as these points are concerned the conformation is an ideal one, though an equally good horse, with quarters equally long, but sloping, will have a shorter body. The main point, however, is symmetrical proportion throughout. I am not able to state the relative proportions of a symmetrical horse in figures, having no book of reference with me. I have been familiar with them, but have tried rather to educate myself to judge of shape by the eye, particularly as the quality and size of bone and muscle in different horses depends to a great extent on their breeding, which can best be determined by observation. I can only surmise why the average of all measurements is requested. Of course this average would not represent the type of cavalry horse in use, for it may be that of a very well proportioned horse and at the same time not that of a single horse in the troop.

The standard cavalry horse must fulfill very few requirements, as prescribed by the regulations. The contractor, as a rule, begins by putting forward his worst horses first, and determines from the action on them the cheapest and poorest kind of horses that will be accepted. Those received will usually just fill the required conditions, and no more. Better horses are not offered. As a result the grade of the whole is low.

As far as mere riding is concerned, the portion of our cavalry tactics that refer to it is a rehash of European cavalry tactics. In European armies cavalry horses first receive a careful school training, and afterwards are turned over to the troopers. Their tactics are made for trained horses. We have copied the tactics, which are not applicable to the horses we buy. In fact, our tactics almost ignore the fact that any special training is necessary, and many officers, especially those who have not served in the cavalry, seem to be of the opinion that any man who can stick well to a docile horse that can be guided with reins in one hand needs only dicipline and a knowledge of drill movements to be a good cavalry soldier, and that such a horse is a properly trained cavalry steed. From such ideas has probably grown the belief that an ordinary, tractable horse, eight years old, broken to ride and controllable by the reins, but otherwise untrained, is suitable for purchase for cavalry service.

Our tactics do give a few pages to the subject of training new horses, but the subject is treated so briefly as to give no idea whatever of its importance, and is placed in the back part of the book, where it is likely to be overlooked. The fact that no inspection is ever made of this matter by an authorized inspector shows at once how it has escaped attention and the little importance attached to it generally. Indeed, our tactics practically assume that a horse will draw in his nose by a slight pull on the reins, and bring up his hind feet by a pressure of the rider's legs, that is, gather himself; that he will back smoothly, without throwing up his head, by increasing the pull on the reins and alternately relaxing and closing the legs; that he will go forward by giving the hand and increasing the pressure of the legs; that he will turn to the right or left in obedience to leg pressure, and that he will move sideways in obedience to the combined action of leg and hand. Now, a horse will not do these things until after months of patient training. It cannot be hurried, for though the horse may soon learn to understand what is wanted, these unusual movements make his joints and muscles sore, just as unusual motions make sore the muscles of a man, and the horse will resist if the pain is too great, and may be spoiled. It takes some time, too, for the horse to learn to do these things quickly and without awkwardness. Yet these movements are the very elements of horse training, most valuable for the horse and for his control by the rider. The school of the trooper in our cavalry tactics applies only to horses so trained. In taking it from the European drill books that fact was ignored.

In Europe the training of the horse is considered to be fully of

as much importance as the training of the rider. The Germans have their cavalry horses in training from a year and a half to two years before given to a trooper. The recruit is drilled in riding only about eight months before he is put in ranks. In a methodical system of school training the horse should be ridden every day for at least one hour, divided preferably into two drills of thirty minutes each, and always ridden by the same man. The salutary effect is, first, that the horse is disciplined and becomes tractable, just as constant drills and restrictions make men obedient and well disciplined. Subordination and obedience are not then irksome, for they become a habit and the restriction is not felt. The horse is also brought in other respects more under the control of the rider, for he can be guided and urged to a great extent by the legs alone, leaving the hands free to use the weapons, and giving the rider some control if his hands or arms are disabled by wounds. In connection with the bending lessons and jumping the horse's muscles are developed and he becomes more agile, supple, and sure footed. He can gather himself more quickly, save himself more easily from a fall, recover himself more surely if he makes a misstep, will be more enduring, will last longer, will have easier and better action, and be in every way a safer and stronger horse than he would have been without such training. The difference is similar to that of two men with equal physical power, one of whom is trained in gymnastics and the other not. Both may be very strong, but the untrained man cannot use his strength to the best advantage, and is clumsy and awkward and more easily worn out. The conformation of the cavalry horse that I have described is one that is well adapted for this system of training.

Another item in training is to educate the horse to move always at one certain rate of speed at the walk, trot, gallop and charge. This requires much time, and also a considerable extent of level, unobstructed ground. Six troops of the Fourth Cavalry, when not scouting, were drilled daily, except Sunday, from early in the spring of 1878 to February, 1879, about eleven months, before they acquired the faculty of moving always at a uniform speed at the walk, trot, and gallop. I have since learned that horses with some school training can be taught as much in much less time.

To make my ideas clearer, I wish to refer to the cadets at West Point and their infantry marching. They form the only military body I know of in our country that execute drill maneuvers with precision, and they do so in infantry drill only. It is due to their uniformity of step in marching. To this day, when walking with

a graduate, even a very recent one, I find myself unconsciously keeping step with him to the old cadence. They learn to march regularly in going to and from meals, during the summer encampment when they march to music, and always at the rate of a certain number of steps to the minute; though I imagine the step is a little short, at any rate it is always uniform, the music marking the same number of steps per minute. The distance marched each time is about 500 yards, with only one slight change of direction, which hardly disturbs the length of step toward the pivot. It takes about five minutes to march it, and taking into consideration rainy weather, when the march is at route step, they practice this regular marching fifteen minutes a day, on an average, from June 15th to August 28th.

In barracks the dress parades, reviews, inspections, guard mounting, etc., have the effect of keeping them in practice, except in the winter, music always marking the steps with a uniform number of steps to the minute. In the latter days of the encampment, if one notices the corps marching to dinner, he will see that the men do not keep the touch of elbows closely, which is a grave tactical fault in some eyes, nor glance towards the guide, yet the alignments are almost perfection; occasionally, it is true, a cadet may be seen a little in front or rear of the line, but his thoughts are probably on anything else but that. In a moment or two, unconsciously to himself, without touching or glancing towards the guide, he is in his proper place. What threw him out was perhaps some little inequality of the ground. He keeps his place by taking only steps of uniform length in uniform time; in other words, by a uniform rate of marching and going straight to his own front. The guides of subdivisions keep their distances in much the same way. Regularity of marching is a habit and requires no thought. The ability to keep aligned has become an instinct, as shown by the man who gradually resumes his place after getting a little out of line. Owing to this training the battalion, as strong as the effective strength of some of our infantry regiments, can march in column of fours indefinitely without the last set of fours gaining or losing an inch, and without thought on the part of the cadets; when wheeled into line there will be no closing in or crowding. Militia regiments, having but little drill, have to depend on the touch of the elbow and looking towards the guide. By these means very poorly instructed men can keep a very fair alignment, and uninformed people are sometimes led to compare them very favorably with cadets. Our regulars, too, from want of sufficient marching exercise to music, have to depend to a great extent on touch and glancing towards the guide. In their case and that of the militia the constraint of preserving the touch and of taking steps of a length and at a rate to which many are not habituated is most tiresome. This effect is often observed after a long march of processions in which militia have taken part, though the cause is never explained. It shows the difference in marching value between a raw soldier and a trained one. Music is of such assistance that for marching instruction alone regimental and post bands should be maintained.

Now, if the cadets were exercised in only a very contracted space, say one in which they could move in no direction more than 100 yards, which at quick time would take but little more than a minute, on account of their rather short step, and had no music to mark the time, it can readily be seen that it would take them much longer to learn to march, especially in double time. They would not be fairly settled in any uniform rate before they would have to halt or wheel, either of which would disturb the step and keep them from soon getting habituated to it. The difficulty would be greater if there were a number of organizations on the same drill ground, each frequently being in the way of the other.

One can see how, after troops learn to march and wheel properly, precision in drill evolutions follows as a matter of course. It is merely the small matter of memorizing the tactics, and very little practice in drilling the movements is sufficient. Always marching at a certain rate gets men so used to it that they can keep up the rate for many hours without fatigue. When our foot troops, regulars and militia, make a march of any length a most noticeable thing is the number of stragglers until after several weeks and perhaps months of practice. Regularity of marching is insisted upon in the German army, even at route step, and is the secret of its wonderful marching powers, displayed from the very beginning of the Franco-German War, and of the very small percentage of its stragglers. The practical advantage was shown in the few days before the battle of Sedan, when the Germans outmarched the French, and on a much longer route. This is the secret of the ability of the German generals to calculate the exact time necessary for maneuvers, and to plan grand combinations with certainty. It also accounts for the remarkable precision of all movements made by German troops. Such a quality in an army is one not to be despised. In comparison with it the grave consideration of minor "tactical points" seems absurd.

The cavalry horse must learn to move uniformly at the walk, trot, gallop and charge, the rate at each pace being that to which the

slower and weaker horses can be trained without danger of their breaking down on a fast forced march under ordinary circumstances. Music cannot mark the rate for the rider, and it must be guessed and learned by frequent practice. It is evident that cavalry will need much more time to learn the regular marching rates than infantry.

There are probably very few troops of cavalry in the service that can march at a uniform rate at all paces, and the chances are that there are none. In the first place, the early cavalry training of many officers has been such that they attach very little importance to the matter, and are perhaps not qualified to properly instruct the men and horses. Although the cadets have considerable cavalry exercise, it is not enough to teach them all they ought to know about training cavalry soldiers, nor is the cadet instruction given under favorable circumstances. Too many men ride the same horse, which is bad for the animal, and frequently the horses are used for draft purposes at light artillery drill on the same day they are used for cavalry. As cadets ride only on alternate days, no horse has the same rider on two consecutive days, and many have two or three different ones at different hours each day. It is impossible, therefore, to give the horses any but the most elementary school training, or to get the horses confirmed in a uniform gait, and without these drawbacks there is not even enough time allowed for platoon and company drill to educate horse and rider to march properly. In the little that is allowed a good deal must be taken up in teaching drill movements. The riding-hall instruction is fair, in some respects excellent, but the horses are not properly trained, and often three times too many cadets are crowded together for instruction at the same time. The cavalry drill on the plain is never even passably good. Precision and regularity are unknown, and this inadequate cavalry instruction has had, I believe, a very unfortunate effect on the cavalry arm. We get young officers from West Point thus imperfectly educated for the cavalry who believe the West Point standard can not be surpassed. They follow in the old rut, and cavalry instruction in our service improves very little. This, however, can not be helped with the present crowded course at the Military Academy. We must rely on the staff to assist in raising the training of cavalry far above what can be taught at West Point.

Other reasons why cavalry horses are not "gaited to obey commands" are, regulating the number and frequency of cavalry drills by the number only required by foot troops at the same post, the frequent absence of too many men and unfavorable drill grounds.

Equalizing the special and extra duty details between the cavalry and foot troops, and requiring detailed men to attend only the same number of drills in each arm, is bad for the cavalry. Cavalrymen are frequently so detailed while they are still very poor riders; but even with good riders it is not the man that needs the instruction so much as the horse. A cavalry soldier should ride his horse every day, winter and summer, in the riding hall or outdoors, in order to keep him trained and under control. Every one knows that a spirited horse is apt to be frisky and a little ungovernable after a few days' enforced idleness. On the days when the extra-duty men go to drill it is always poor. The fault is often attributed to the men for not controlling the horses, but the fault is with the horses themselves. Under such a system no cavalry can be properly instructed. It will not do to let other men use these horses at intervening drills to exercise them, for if the rider has an interest in his horse he will object to it, and when it has been practiced many horses have suffered by it. It must always be remembered that the cavalry soldier is a combination of two beings, one human and the other brute, and when the training of either is neglected this combination soldier is imperfect; and further, that on account of his lower intelligence the brute requires more training and handling.

Taking again the cadets, the most constantly drilled body of men in our country; during the winter they march frequently, in good order, to and from recitations and meals, yet the march is often at route step and the distances are short, and when the spring drills commence a deterioration in their marching is apparent. In the manual of arms their falling off is more noticeable; owing to their former training their improvement with practice is very rapid. A horse forgets his training much more quickly than a man, and after a long interval of rest does not recover his training so quickly. This is why a cavalry soldier should ride his horse every day. It should be just as much a matter of course as going to roll-call or to meals, not for most of the men only, but for all. The necessity for having all men available in a cavalry troop is just as great as it is in a light battery. The best relief, however, would be in having an authorized corps of mechanics, laborers and clerks sufficient to do the work now performed by detailed men, and in excess of the strength of the army.

For drill a troop of cavalry needs enough of clear, level ground for the horses to settle down to a certain gait and maintain it without interruption for some little time, so as to grow accustomed to the rate, and so that after awhile the rider will know the proper rate

intuitively when his horse strikes it and can keep him at it. Until the horses learn to move always at a certain uniform rate at each gait, and to go straight to the front, so that the alignment will depend almost entirely on uniformity of pace and straight direction, and not upon touch nor glancing toward the guide, the march of the troop should not be interfered with by halts, wheels, other troops on the drill ground, or drill movements. The latter can be introduced gradually in the latter part of the drill hour, to break the monotony, so long as they do not break up the horses. At an easy gallop a horse will pass over a mile in five minutes. On the drill ground some distance is needed in which to break progressively from a walk to a trot and from a trot to a gallop, and allow the horses to become confirmed in each gait before passing to the next higher. At the end of the gallop a little time is also needed, and consequently distance, in which to let the horse settle quietly into a trot. Five minutes is not too long a time to give horses to settle down to a uniform gallop, and get the rider so used to the rate that he will know it when the horse strikes it. The drill ground then should be no less than 2000 yards long and wide enough to let the other troops of the garrison drill at the same time without interfering with each other, otherwise the troops should drill at different hours. For one troop it should be wide enough for the whole troop in line to change direction at the gallop, get the horses quiet without changing the gait, and then have room enough to change direction again. With the cadets at West Point this would take nearly the length of the cavalry plain, or about 400 yards. With horses properly bitted, and with a proper school training, and with riders that can ride, a width of 300 yards ought to suffice.

In learning to charge a greater extent of ground is preferable. The days of charging over very short distances have passed, and in the present day the requirements of our cavalry tactics on this point are ridiculous. Cavalry may now be called upon to charge 600 or 800 yards, perhaps farther. After the horses learn to march steadily at the gallop the speed can gradually be increased to the charge and kept there until the line breaks; as soon as this happens, the troop can be brought to the gallop and kept there until the horses are quieted, when the gradual increase to the charge can be repeated, to be checked again as soon as a break occurs. In time the horses will learn to move quietly and in good order for considerable distances at the charging gait. This was the method followed by some troops of the Fourth Cavalry at Fort Huachuca, where there was good ground, nearly level, for four or five miles. For charging, the drill ground should be large enough to allow of charging in oblique directions and across it. If horses are charged always over the same ground near the close of a drill they are apt to grow excited as they approach the ground, and the conditions indicate that the charge is about to take place.

It may be urged that all this care to teach horses to charge well is unnecessary, because the charging days of cavalry are over. If learning to charge properly had no other value, it would be admirable instruction on account of the disciplinary effect on the horse, and the control over him it would be likely to give the rider in a mêlée or time of much excitement. It also has a tendency to develop coolness and presence of mind under the same circumstances in the rider. That the days of cavalry charging *good* infantry in *good order* are over is probably conceded by every cavalryman. Cavalry might as well attempt to ride over a man-of-war. But in raids cavalry will often meet recruits, militia, and home guards, on whom a well-directed charge may have a wonderful moral effect. In France a dozen Prussian Uhlans would capture whole villages; in our own country forty or fifty hostile Indian warriors have kept in abject terror an area as large as the Middle States; JOHN MORGAN and his guerillas were more feared in Kentucky and southern Indiana than BRAGG's whole army when it marched on Louisville. But when two armies are approaching each other cavalry will meet the enemy's cavalry long before it reaches his infantry. The grandest cavalry combats of the world are yet to take place. Cavalry that can not fight mounted and charge will stand no chance with cavalry that can. Men that always have to get off their horses to fight when threatened with an attack can be kept on the ground by a comparatively small force constantly threatening, and will have very little value as an offensive force.

After learning to march regularly at all gaits, and to wheel, precision of drill, as in infantry, is only a matter of memory and some little practice. Horses and men are then prepared to learn any system of drill tactics whatever in a very short time. Good riding and proper training of horses are the elements of all drill. Knowledge of drill evolutions is entirely secondary. Neglect of the former qualifications and blind insistence upon the latter, with consequent slovenly performance, has been the rule in our service.

From the spring of 1878 to the fall of 1881, that portion of the Fourth Cavalry at regimental headquarters had been drilled almost daily, whenever practicable, both in the garrison and field, and, with very few exceptions, extra and daily duty men attended. This was

done even during the coldest weather in the winters of 1879 and 1880 at Fort Garland. The horses had no school training, but steady drilling and scouting had made all the men at least fair riders and the horses docile and settled in their paces. This command was inspected frequently by general officers, inspectors, and other staff officers, all of whom wanted to see drill movements, a lot of galloping around and quick action, and particularly dismounting to fight on foot. All seemed to be rather pleased by the performances, and that was all. In the fall of 1880, while the command was in the field on the Ute expedition, General SHERIDAN reviewed it. The battalion consisted of five troops, and it had not marched in review twenty yards, marching as easily and regularly as cadets, before the general turned to the regimental commander, and in a few words showed that he appreciated the time and attention that must have been bestowed on the instruction of the men, and that he was conscious of their capabilities. He was the only officer that ever inspected it who did, so rare was the knowledge of the principles of cavalry training. This shows how good an idea of the efficiency of cavalry can be gathered from a simple review. When the review is for purposes of inspection, and in fact always, it is better to have the cavalry review distinct from that of other troops. When reviewed with them it has to march behind infantry or artillery, and the infantry walk is too slow; while at a trot the artillery, with smaller platoon front and no slacking of the gait on the pivot at the turns, gains so much ground that the cavalry is kept at a fast trot and jiggling gallop to keep its place. The usual paces of the cavalry horses are disturbed and they are uneasy behind the infantry and worried behind the artillery. The spectacular effect may be fine, but no proper criticism of the cavalry can be made.

The essential qualities in a cavalry soldier are ability to ride well both in the riding school and across country, to understand the management and care of his horse in the field, in garrison, and at drills, to be able to shoot well, to handle his saber, to know how to pack a mule, to cook his rations in the field, to nail on a shoe, to mend his clothes, to patch up roughly his footwear, and to mend temporarily at least, broken or torn equipments. He should also have a good eye for country, so as not to lose his way, and be ready with resources and expedients. If a non-commissioned officer, he should also be able to make notes of a reconnaissance and prepare maps, not elaborate ones that it will take a day or two to make, but rough ones that he can sketch in fifteen or twenty minutes. On my present duty I have already been hampered because only one man besides the blacksmith can nail on a fitted shoe, and but few can pack. The troop is divided into many small patrols or detachments in a very rough country, and all must come to the main camp for shoeing. The few packers must be kept out nearly all the time. In order to prepare a fair map of the park either my lieutenant or myself must go to every part of it. This is why I have said the non-commissioned officers are not properly instructed.

The only one of the above conditions required of a cavalryman is that he shall shoot. Various departments require different things from the cavalryman. If he can do nothing else, in order to equalize details he is given to the Subsistence or Quartermaster Department as a laborer; the Signal Corps demands certain instruction in signaling; the Medical Department requires a certain number instructed as litter bearers; if a recruit, he must go to school. In the Cavalry Department, with the exception of shooting, but little is required. The knowledge of packing that now remains in the regiment is due to the efforts of Colonel MACKENZIE nearly twelve years ago.

The equalizing of details among all the troops of a command has more evils than I think is understood. For weeks last winter, owing to the absence of men on extra duty and fatigue, the average attendance at stables to groom sixty-five horses was about seventeen men, including non-commissioned officers. The post commander partially helped this state of affairs by having afternoon stables after recall from fatigue, which gave many more men, but the extra men had already done a day's work. The cavalryman has just as much work about the barracks as the infantryman, but the quantity of details makes the duty of the cavalryman about the stables harder. He has to groom more horses, and go on stable police, as stable orderly, and on herd guard much oftener. The contrast in the amount of duty is apt to cause discontent. At the Presidio, while my few men were grooming sixty-five horses a full light battery in the next corral was grooming less than fifty. My men were kept at stables more than twice as long, doing the work of absent men. During the drill hour cavalry mechanics have been employed on artillery stables, while all the light artillerymen were at drill. Under the above circumstances it would be hard for a troop commander to have the discipline of his men criticised, or their efficiency compared unfavorably with that of a light battery, or even of foot troops.

The cavalry recruit should be not more than twenty-five years old, so that he can learn to ride. The recruits should be enlisted at

a certain time of the year, so as to form one class, then taken to the recruiting depot and kept there for at least a year, and placed under a discipline similar to that of West Point, though not necessarily so strict, and be given a thorough gymnastic and cavalry training, so far as the time will permit. All the school teaching considered necessary should also be done there, for it can be done systematically under well chosen teachers. This will get the recruit under some restraint, to which he will be accustomed, before he joins his troop. His comfort and welfare should be looked after just as carefully as possible, and the depot should be inspected as thoroughly and by the same high officers as the military prison. It should be a preliminary training school, modeled to some extent after West Point, but with considerable more practical military instruction and very little stress on bookishness.

Young horses for the cavalry should be bought, placed on a reservation, and trained. The depot for cavalry recruits should also, if possible, be at the same place, where the recruits will have the advantage of observing the handling of horses and be thrown into the company of old soldiers employed in this business. Provision should be made for discharging or transferring men who are backward in riding or show fear of a horse. I have two men now in their second enlistment who can not ride as well as a six months' recruit ought to do, and are probably too old to improve. They manage to get around fairly well at drill though, and that is about all that is required. Horses that do not develop suitably can be sold, or transferred to the artillery. Their value will not be impaired by the handling and training they have received, but rather enhanced.

In cavalry matters it must be remembered that the cavalryman must be a man of action and not a dreamer, and that a little practice is worth a great deal of theory; that the way to learn to drill is by drilling, to shoe horses by shoeing, just as swimming must be learned, not from books or lectures, but by going into the water. Much of the time wasted in memorizing and reciting on tactics could be much better utilized by drilling. If any non-commissioned officers could not learn otherwise they alone might be made to go to school, but the better plan would be to reduce them for neglect or incompetence. The summer camp is also of but little benefit: the good effect is the opportunity it gives for getting a number of men together, away from "post duties," where the captains can have some opportunity to control many of their own men and get acquainted with them. But in the main, camp life is only garrison life under canvas. Good active field work, with a fair proportion of

forced and night marches in all weather and over every kind of country, kept up for thirty days, will be more instructive than camp life continued for thirty years. Assuming West Point as a standard, the militia have adopted summer camps because the cadets have one. With their inexperience of garrison life, and the short time they have to spare, it is as much, perhaps, as the militia ought to attempt. With our much greater experience we seem to have followed their initiative in what is of very little use to us. On the contrary, to cavalry troops accustomed to field work the summer camp is simply a holiday.

The improvement of cavalry can be begun at once by concentrating the cavalry as much as possible at purely cavalry posts, commanded by cavalry officers, where the facilities for instruction are good. In carrying out this, troops of the same regiment should be kept together as much as possible. The idea of getting troops from different regiments at the same post seems to be a favorite with some, but only troops that have been so distributed can appreciate the relief and better feeling that at once appears when they are garrisoned together again with their own people. Very little value apparently is placed on regimental pride at the War Department, but without it troops can never be as good as they might be. It is bound to be broken down now, for the young officers entering the service can not take the pride or interest in their regiments that was once taken, and promotion only takes them to another regiment which is simply an abiding place till the next step occurs. Still, it is worth while to try to hold on to the little pride that remains for the good it may do. At purely cavalry posts there are no contrasts between the duties of troops of the different arms. In technical matters, the cavalry should also have its own inspectors, as the heavy artillery has now. In time, when the examination for promotion is based on what a cavalry officer knows about cavalry service, and on his ability to train and handle men and horses, and his efficiency in the field, cavalry officers only, except the medical officers, should be placed on boards to examine cavalry officers, and the subjects should be selected by them.

Owing to the reduction in the number of cavalry troops and the cavalry strength, the concentration of cavalry and a much higher standard of training are more imperative. In the militia the number of cavalry is exceedingly small, and cavalry require such long training and so much care that in the event of war we would soon have practically none. It has been said by competent military critics that in the first two years of the War of the Rebellion bloody

battles were fought unnecessarily and many victories were practically fruitless for want of good cavalry, properly employed. We are not in the habit of heeding the military lessons taught by our history, but it may be worth while to make some effort to do so.

I have written thus fully because I understood while in Washington last winter that questions were sent out from the Inspector-General's office with the intention of having every officer express himself freely and fully upon all points connected with the welfare of the service, and that if he did not take advantage of it it was his own fault. I do *not* wish to obtrude my opinions upon those above me in authority and am not in the habit of doing so, but submit them only because I understand that I am invited and am expected to do so.

CAMP AT MINERAL KING, CAL.,
June 8, 1891.

PROFESSIONAL NOTES.

TWO LETTERS FROM GENERAL DRAGOMIROFF, ON THE SUBJECT OF "LES ARMES BLANCHES."

(Translated from the *Revue du Cercle Militaire*.) by C. C. C. Carr.

The Editor of the *Scout** conceived the idea of writing to General DRAGOMIROFF, asking his opinion in regard to *les armes blanches*. In answer, he received the following:

FIRST LETTER.

I. The various kinds of *armes blanches* may be divided into two classes quite analogous to those embracing fire-arms. On one hand we have the thrusting weapon, corresponding to the arms using "direct fire;" on the other, the cutting weapons, the counterpart of the weapons employing "curved fire;" there is no third class, and should be none. The reason is plain: man creates nothing which does not correspond to his own image and likeness. Now, his natural weapon is his fist, with which he can strike vertically, from above downward, or horizontally, by thrusting it out in front of his body.

And all kinds of *armes blanches* only reproduce this fist, with its two-fold character, considered as a fighting weapon, but with its power much increased. To strike down an enemy with a blow of the fist, one must be very strong and choose a favorable place for delivering the blow; while with the dagger, for instance, a mere child might kill a strong man.

II. The improvements made on the fist as a weapon are well known, of which the first was the club, or the ball attached to a leather thong; and, successively, the curved Cossack sword, the yataghan, the axe—all representing the improvements made on the fist employed as a weapon with a crushing effect.

The others, represented by the pike, lance, straight sword of the cuirassier ("lath"), bayonet and dagger, show the improvements made in the thrusting weapon.

The forms and dimensions of *les armes blanches* have undergone a variety of changes in order to produce different effects; and exactly

* A Russian paper.

in proportion to the frequency and effectiveness with which they were used, as, for instance, among the mountaineers and Cossacks in their struggles in the Caucasus, did they tend towards simplicity—the curved saber for the latter, and the dagger for the former, and nothing more.

The controversies concerning the superiority of the thrusting over the cutting weapon, and the reverse, have been numerous, over the most advantageous forms and dimensions of the blades, hilts, etc. Vain discussions, for they have generally taken place among persons who, during their whole lives, have never worn at their sides anything but virgin swords, which have never been sharpened, frequently not made of steel, and, in some cases, swords which have never been drawn from their scabbards, but have been actually fastened in them.

III. How shall discussions of this kind be explained? Simply by the fact that man prefers the creations of his own imagination to the pure and simple study of a question—to a study carried on without trickery and without a desire to merely discover something unknown before. The desire to be original, and, to speak freely, "to froth at the mouth," explains the circulation of so much nonsense. Still, that might be forgiven, if this nonsense were harmless; if, for the purpose of bringing himself into notice one should simply explode a petard that would harmlessly burst and disappear; but in this particular case there is too much of it, to which notice is continually called by a vigorous and persistent beating of the bass drum. Let us, for a moment, look at the reasons for this discussion.

IV. *Which is the better, a cutting or a thrusting weapon?* If we return to the character of the fist we shall see that the study of this question amounts to a discussion of the following: "Which is the better manner of using the fist; from above downwards, or straight from the shoulder?" Evidently, the answer depends on circumstances and the individuals whom one strikes; and also on the method to which one is most accustomed.

In disposing of these two methods of attacking I must consider them equivalent within the limits of my familiarity with them. Familiarity which will be a personal quantity if it concerns me only in single combat, but which will be that of the troops to which I belong if it be a question of the combat of troops.

The partisans of the thrusting weapon cite the words of NAPOLEON: "Point, point, never cut!" were his directions to the French, among whom the knowledge of fencing, thanks to the authorized practice of dueling with the sword,* was so common throughout the army as to almost constitute it a national custom—certainly a military one.

If NAPOLEON had been addressing us Russians, it is very probable that he would have said, on the contrary, "Cut, cut, never thrust!" seeing that the art of fencing is not generally diffused among us,

*Among soldiers, as well as officers, dueling with the pistol was forbidden, for while any coward might face the muzzle of a pistol, it required a brave man to fight at sword's length. The practice of dueling was considered an important means of educating officers and men.

while the habit of "cutting," and "cutting well," is common to all our young men, excepting a few workmen and merchants in easy circumstances.

By placing you at this point of view, you will doubtless agree with me that all this talk about the "point" requiring more skill, and the "cut" more force, and other things of a similar nature, is of no value whatever; at least that is my humble opinion which, however, no one is compelled to adopt.

"But," you will say, "if that be so, the infantry should also be provided with a cutting weapon, and yet that is not done in any army of Europe." Of the infantry we shall speak later; for the present we shall discuss the question of *les armes blanches* from the cavalry point of view only, the cavalry being the highest representative of the employment of this arm, and having, so to speak, the exclusive privilege of striking the enemy directly, that is to say, first of all by its own mass, and then using *l'arme blanche* only in the details of the combat, and for the purpose of completing the victory. So the preference to be given in the cavalry, to the thrusting or the cutting weapon is determined, in the first place, by national customs; secondly, by the examples of the specialists who have really used them and not by those who employ them merely for purpose of display. I consider as specialists of the first class our ancient Caucasian mountaineers, and the Cossacks of the Caucasus, their brilliant pupils. The arms of both, as I have already said, are distinguished by a remarkable simplicity; the *chachka*, a light and well balanced saber, and the *kinjal*, poniard; the last is, however, employed only on foot and for domestic purposes.

V. *Forms and Dimensions of the Weapon.*—The question of form naturally concerns only the cutting weapon, and even that is, to a certain degree, idle and unimportant. To be satisfied on that point it is enough to compare the curve of the yataghan (cimeter) with the less pronounced one of the *chachka*. And yet a Cossack would no more exchange his *chachka* for a yataghan, than a Turk would trade his yataghan for a *chachka*; it is entirely a matter of habit.

The question of the dimensions of the weapon is a much more important one; if not so of itself, at least because it has led men to talk nonsense more frequently and violently than any other. For thrusting weapons, this question is naturally the most important. At first glance, it would appear that the longer the weapon,* the better it is; but this opinion is founded only on a hasty conclusion, inspired by the instinct of self-preservation.

If one has reflected on this subject at all, he is apt to say to himself: "If I can attack my enemy at a greater distance with a long lance, he will not be so great a fool as not to avail himself of the same advantage, and, consequently, in the most favorable cases, the conditions being the same for both, things will be evened up again. But, as a matter of fact this does not happen; the experience of centuries showing that the ones who load themselves down with such weights are, in the end, hopelessly beaten on every occasion.

*Within the limits, be it understood, of convenience of handling and the strength of the man.

We have the proof of this in the history of the Romans, armed with relatively short swords who, in every encounter defeated the Greeks, whose first eight ranks were armed with lances so long that those of the eighth rank were obliged to be 6.40 meters long in order to extend beyond the front rank. What could be more threatening or apparently more invincible than to have one's whole front covered with a forest of spears, eight ranks deep? And yet it never stopped the Romans, and the Greeks were compelled to turn and flee.

How is this result to be explained? Very simply: The Greeks were so embarrassed by the weight of their arms that they did not dare to attempt to make an attack while marching: and the Romans were not inclined to take the word of their adversaries as to their own invincibility. They put them to the proof: that is to say, they dashed with impetuosity against this wall, made great gaps in it, approached to within sword's length of these pikemen, and then proceeded to carve them up in a highly artistic manner. What remained for the unfortunate Greeks to do in the face of this *barbarous* manner of fighting, except to turn their backs and run? That is exactly what they did, and probably finding themselves embarrassed by their heavy weapons, they soon threw them away in order not to delay their "strategical retreat."

In the face of these well established facts every man whose brain is not obscured by theories or personal prejudices, will necessarily arrive at the following conclusions:

1. In the employment of *les armes blanches* success does not depend on the length of the weapon, but on the attacker's determination to approach near enough to the enemy to make effective use of his weapon.

2. The guarantee of the attacker's success is to be found in the impetuosity of his forward movement. CÆSAR himself has said that a rapid advance warms the blood and makes a man lose all idea of danger. If, then, in this matter, movement has so powerful an influence, everything which can possibly hamper or slacken it should be dispensed with.

3. The greater the length of a weapon the more difficult it is to handle it. A long weapon retards movement and, sometimes, completely paralyzes it: consequently, even in an attack on foot, instead of being advantageous, it is positively detrimental: much more would it be so in a mounted attack.

These principles have been formulated much more briefly and clearly by FREDERICK THE GREAT in his well known reply to the report about the necessity of changing the Prussian cavalry sabers, which were two inches shorter than those of the enemy: "Well, let our cavalry get two inches nearer the enemy."

The American, DR. HOLMES has very justly observed on this subject that "Generally the nation that shortens its weapons extends its frontiers."

If these aphorisms are true, you can appreciate at its just value the rehabilitation of the lance in certain European cavalry regiments, as well as the degree of importance which has been attached to this fact.

VI. But, however that may be, you will say the lance is advocated by many military authorities; and very recently, even in the first half of this century Marshal MARMONT has said that "the lance is the queen of weapons."

My answer to this is that authorities are not agreed on this point. In the first place, Marshal MARMONT had served principally on the staff. Besides he was fond of using phrases, and this expression did not come from him directly, but through a foreign channel. Consequently, we must not accept his remarks as gospel truth, especially on a question of armament. In a matter of that kind, any Cossack or intelligent non-commissioned officer's opinion must be sounder and more practical than that of a Marshal, even if he had spent his time elsewhere than in the staff.

This same phrase had already been used in the XVII Century by the Austrian General MONTECUCULI, but under what circumstances it is well to remember. It was used at a time when the bayonet had not yet been invented, and the infantry were either pikemen or musketeers, that is to say, when they were armed only with pikes or fire-arms. This aphorism was only used to indicate which arm would decide the success of the combat.

Consequently it was only the expression in another form, of the maxim of SOUVAROFF: "The bullet is wild, the bayonet is true." In MONTECUCULI's day, as there were no bayonets, he said: "The bullet is wild, the pike is true," and he said it in his own way, not in the terms employed by SOUVAROFF.

We must, therefore, remember that if the lance has ever been the "queen of weapons," it was by comparison with the musket, and not with any other kind of *l'arme blanche*. As soon as the musket was crowned with the bayonet the lance or pike disappeared from the infantry, where it had always been of more importance than in the cavalry, for the infantry soldier always held and handled it, *with both hands, not with one.*

In a question of armament we must not study each arm by itself; we must also take into account its employment, the influence it exercises on the morale of men, and from this point of view, the relations between fire-arms and *les arme blanches*. If I have not already exhausted your patience, I shall write of this in a future letter.

M. DRAGOMIROFF.

On the subject of the bayonet, spoken of above, and after having given a hasty historical sketch of the invention and successive improvements of this relatively modern weapon, General DRAGOMIROFF adds, in the form of a "note," the following remarks, which we think worthy of reproduction:

Truth compels me to say that the lance had few partisans; Marshal SAXE in the XVIII Century, and in our time (the first part of the XIX), JOMINI and DE BRACK. The first advocated the lance, I

believe, more as a matter of tradition than anything else; the second reasons about it in a purely theoretical way. It is enough to remember that he considered it the best *offensive* weapon, while, in fact, of the whole family of *les armes blanches* it is precisely the best suited to the *defensive*, since its principle object is to prevent the approach of the enemy.

JOMINI wrote: "The lance is the best *offensive* weapon for a body of cavalry charging in line, for it reaches the enemy *while presenting his approach.*" So, then, it is an *offensive* weapon, which will prevent an enemy, wherever he may be, from *approaching*: that is to say, whose object is to obtain a purely *defensive* result. What better example could be given of the way in which the best theorists sometimes confuse things by contradicting their own assertions at intervals of two or three lines? I do not think it necessary to discuss the pretended impossibility of attacking troops armed with pikes, a difficulty overcome, as I have already shown, in the conflicts of the Romans with the Greeks.

And yet, JOMINI knew the effect of the Roman swords on the Greek lances; yes, he certainly knew all about it, but he forgot it, and supplied a notable instance of a fact universally known being entirely forgotten.

As to DE BRACK, he commanded troops and consequently his opinion deserves greater attention. But even he supports the lance with arguments of a hasty kind, whose conclusion, whether intentionally or not, seems to have been overlooked. For example, he says: "The lance is *l'arme blanche* whose moral effect is the most powerful, and whose thrusts are the most murderous." If this argument be carried to a proper conclusion, it results that the lance is *l'arme blanche* which produces the greatest moral effect on cowards, but which will never stop the advance of brave men; whose blows are the most murderous if correctly aimed, but whose precision, on account of the length of the weapon, is always doubtful.

Again, the lance is a heavy load added to the weight carried by the horses; it constrains the movement of the trooper and it is impossible to teach its correct handling in the time allowed by the short period of military service at the present time. Consequently, its partisans can make only one claim for it: the possibility of keeping one's adversaries at a safe distance; all the other elements of the question, whether voluntarily or ~~not, have~~ been absolutely dropped out of consideration.

M. D.

SECOND LETTER.

VII. I had almost forgotten to answer the question: "Why are not cutting weapons used by the infantry?" The answer is simple: Because it would not be easy to secure weapons of that kind to the rifle, while there is no difficulty about attaching the bayonet. As in this way, the rifle serves a double purpose, that of a rifle first, then as a staff for the bayonet—making a substitute for the pike—there is no longer any room for a cutting weapon.

No matter how much the "technique" progresses the rifle will never be changed into a pistol, and will of necessity, always remain of such a length that it will be impossible to handle it except with both hands. Add to it the bayonet, for the use of which both hands are necessary, and it is evident that it is completely useless to attempt to cut the enemy when you can reach him with a thrust. Consequently, it is plain that having for a thrusting weapon a handle like the rifle which can serve two purposes, there is no need to seek for a cutting weapon.*

"Yes," you will say, "but the national habits." The national habits are to be considered when it is a question of using a weapon under difficult conditions, as, for instance, using it with only one hand, which is the case with cavalry; but when both hands can be employed in using the weapon, it is sufficient to be able to deliver a thrust. Under such circumstances, however, national characteristics still show themselves; for that reason, among us Russians various weapons, good only for cutting purposes are brought into play in the mêlée. Every time that, for any reason whatever, the Russian infantry has found itself without a rifle, a cutting weapon has been brought into use. Thus, in the Crimea two ships' crews took part in the battle of the Alma, making use only of boarding cutlasses.†

At Sebastopol the militia of KURSK fought with axes.‡

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* Formerly it was believed to be necessary to give to the musket armed with a bayonet, such a length that the trooper could not, from his horse's back, reach the infantryman with his saber. That is exactly one of the cases, mentioned in a previous letter, where considerations entirely foreign to the properties of the weapon, could determine its length.

This precedent has been observed from the time when it decided the length of the pike; and it has not even yielded to the arguments drawn from the Roman weapons, or the answer of FREDERICK to the remark about the sabers being "two inches too short." That is why the barrel of our Berdan rifle is four inches longer than is demanded by the ballistic conditions of the weapon, and why the bayonet attached to it is seven inches longer than is necessary to *enable it to go clear through a man.* Results: Reduction of the initial velocity, and the imposition of an unnecessary weight on the foot soldier.

These are all merely theories based on the desire of preventing the enemy reaching you, and *which ignore this eternal truth*, that the success in the employment of *les armes blanches* does not depend upon their length.

All similar ideas are inspired by the instinct of self-preservation which can never be made to harmonize with the military axiom that, *in war he only will kill his enemy who has no fear of being killed by him.*

"But," you may say, "he can kill you at three thousand paces." Well, I can also kill him at *three* thousand paces. Consequently, honors are easy; for, as a general thing, all the mechanical improvements made on the human "fist" are neutralized just as soon as both adversaries are provided with them.

As to instituting comparisons between arms of different powers, that is perfectly useless; for that can, in no way, elucidate a question which, in theory, must always be examined when all the conditions are equal, if we wish to arrive at conclusions founded on facts instead of mere speculation.

It is true, that in a transition state, like that of the present day, some of the adversaries may be better armed than others. But even this state of affairs would only show that superiority of armament is not entitled to the importance attached to it by those fond of making comparisons between the ranges, the "per cent" of peace times, etc. Take for example, the war of 1870, when the French had better arms than the Germans, and still later, that of 1877, in which the Turks had weapons much superior to those possessed by the Russians.

The truth is, that at last, we shall have to fight with weapons equally effective, and the victory will rest with the one who takes the greatest chances of getting killed, or, in other words, who troubles himself the least about losing his precious life.

† The testimony of an eye witness.

‡ In this it is naturally only a question of armed forces more or less regularly organized. In popular outbreaks weapons of all kinds are used; pitch forks, scythes and knives, all take part in the dance.

In the cavalry where the trooper has but one hand with which to use his weapon, the cutting weapon is preferred in any country where it is habitually employed. In all the Orient I know of no nation where anything like our cavalry "lath" could be found in use. It is true that some of them have lances, but I am inclined to believe that is explained by the character of the enemies these people have to fight, who are, evidently, not disposed to engage in hand to hand conflicts; whenever the adversary not only does not decline battle, but actually seeks it, for mounted fighters the cutting weapon has always been preferred to the thrusting.

VIII. *The Employment of the Arm.*—A good workman is known by his work. Everyone knows that a skillful carpenter can make, with nothing but an axe, things which an unskilled laborer would fail to make, even with the use of the most delicate tools of the trade.

Let military men answer this question: "Of what use is it to encumber a soldier with a whole arsenal of arms if he is not taught how to use them?"

Nothing is more evident than this truth, and yet it has remained a long time uncomprehended in regular armies, while the people of Asiatic nations have fully recognized its importance.

In a word, the use of any arm presupposes instruction in its use, as a necessary condition; if, be it understood, it is not admitted that it is only necessary to load down any given soldier with arms, and that he will know, without previous instruction, not only how to cut and thrust, but even to choose at any given moment, from the arsenal he carries, exactly the most suitable weapon in each particular case.

And thus is shown the necessity: 1st. Of instructing the trooper in the use of each arm he carries. 2d. Of inculcating in him the instinctive habit of instantly and without reflection, deciding in what order these weapons should be successively employed.

That, many persons will say, is a mere matter of course. How could it be otherwise? In fact, it seems that that should be the case; but, in reality, it is not at all so.

Let us remember how short a time has elapsed since the instruction of men in sabering and thrusting was first begun. And even now is it as much insisted upon as its importance demands?

I have no doubt of the answer which will be given by all who know whereof they speak, and have no desire to deceive themselves or disturb the settled convictions of others.

And yet we must not forget that we are concerned with the use to be made of arms, not in a state of tranquil mind, but in the very midst of danger. Now, under such circumstances a man does well only that which, in time of peace, has become an instinctive habit with him.*

*I cannot help narrating here an incident of the Crimean War, related to me by an eye-witness:

"A Russian battery had just gone into position and opened fire. All at once, I saw," says the narrator, an officer lately promoted and under fire for the first time—"the ammunition carrier of one of the pieces, make an about face, by the motions, strike himself on the thigh with the palm of his hand, and move with cadenced step towards his caisson; on reaching it, he extended his hands as though to receive a projectile, then faced about, struck himself again on the prescribed place, and then marched toward the piece. On arriving there, he went through the motions of inserting the supposed projectile, which he carried, into the muzzle of the piece, and then faced about again and returned in the same methodical way, to the caisson. I do not know how long he would have continued this dumb show, but he ceased only on the intervention of a non-commissioned officer who brought him to his senses by the methods then employed in such cases."

This example shows admirably the force of habit, and the advantage of training men to execute movements mechanically. This ammunition carrier, who, under the enemy's fire, had completely lost his head, still executed with perfect precision—not what should have been done—but that which he had been taught. At that day the regulations required a man in making an about face, to strike his thigh with his hand, of which fact, those who have entered the service since the Crimean War, are doubtless ignorant. The object of it was simply to press the short artillery sword against the thigh to prevent its swaying about during the movement.

IX. That which has especially contributed to the neglect of the practical use of weapons, is the present organization of armies, and the continually increasing strength of their effectives. The study of the movement of masses has absorbed attention almost to the point of entirely forgetting those which the soldier should execute individually. For the benefit of readers who may doubt this statement, I shall briefly relate the history of instruction in rifle practice—a history little known to those who have entered the army since the close of the Crimean War.

In the last century, and the first of this, soldiers were only taught how to load and fire from the shoulder; never how to take aim, for each one was simply required to fire straight in front of him and not upon any particular object, and that with blank and not with ball cartridges.

I have also known the time when marching and the manual of arms absorbed the whole time, without anyone disturbing himself about the man's method of aiming: the time when, once only during the whole period passed in camp, and not even every year, a few companies of the regiment were sent to fire at a target, generally on Monday, and the men limited to the expenditure of three cartridges at most. And this regiment of which I write, was considered one of the best instructed; so you may see to what a condition target practice was reduced. The fencing with the bayonet was not even thought of; instruction in its use was limited to charging bayonets.

Such a neglect of target practice is a proof of the fact, apparently incredible, but perfectly true, that it was believed to be utterly useless to teach men how to use their arms. It was thought that if the soldier knew the manual of arms, and could fire a blank cartridge at the command, "Ready; fire!" he needed no further instruction.*

It was only with the introduction of rifled arms that the necessity of practicing, no longer with blank, but with ball cartridges, and the impossibility of learning to shoot without bullets and targets, were comprehended. Then it was seen how vain was the exercise of masses of troops in close formations, as they could not be made

*The "carabineers," it is true, used to fire at a target; but they were merely a drop of water in the great sea, since there were only six of them to a company. In connection with this subject I cannot refrain from relating, that during the Crimean War, a non-commissioned officer was sent to the Opoltchénie as an instructor to teach the manual of loading the musket. And having been invited by an officer of the militia to teach the execution of the manual, using ball cartridges, very respectfully but firmly declined, saying that he understood thoroughly how to go through the motions of loading in twelve, eight and four times, and at will, but that the loading with "cartridges" was entirely unknown to him.

ready to fight until each soldier had been individually taught not only how to march, but especially to shoot and thrust. And it was only then that the training for parades was exchanged for military "instruction" and "education."

The history of *les armes blanches* was exactly the same; to teach men to saber appeared so useless, that until within a short time the blades were left unsharpened, and, if recently, it has been decided to sharpen them, it is principally, if I am not mistaken, on account of the impossibility of sharpening so great a number of weapons at the moment of mobilization; and yet, naturally, sabering begins only after the saber has been sharpened.

X. In the same way it has been only recently discovered that the practical use of *l'arme blanche* demands the employment of a target as much as the fire-arm does. I would even assert that the employment of a target in this case is even more necessary; for in the use of *l'arme blanche*, comes in a question of time, which in shooting, plays only a secondary part.

In fact, *l'arme blanche* being used only in a hand to hand combat, it is clear that if you delay in giving your blow, be it only for the infinitesimal fraction of a second, it is the adversary who will strike you; and the combat will be *terminated often in a very definite way*. If your blow misses its object, that is to say, if you strike in space, or if you deliver only a harmless thrust, the instant afterward you are put beyond all possibility of repairing your want of skill.

It is clear then, that in the employment of *l'arme blanche* it becomes a matter of enormous importance, and one of which one can form no idea in shooting, to measure, in the twinkling of an eye, both *time and space*.

To understand the importance of the double telemeter, which one must carry in his head, is only a small part of the affair. It is also necessary that all the observations of this instrument should be instantly communicated to the eye and hand, that the combatant should apply them, without reasoning, and by simple reflex action. There must be no hesitation, for a moment of that may cost you your life.

And that is not all. You may have seized the proper moment, and rightly estimated the distance, but, in directing the blade upon the line of shock, you have not held it parallel, but oblique to the plane in which the shock is produced, and, in place of a serious cut, you have made only a harmless scratch. Never forget, at the moment of striking, to give the blade a gliding motion, and not cut with it as you would with an axe. All which goes to show that to deliver a saber blow is far from being a simple and easy thing, and, that without repeated practice, it is an operation almost impossible to perform.

Therefore, people who see in a weapon something else than an insignia of military office, something besides a "window-bar"* for

*Unsophisticated men are pitiless in their unconscious irony, and have no hesitation in calling things by their right names. It is not so very long ago that troopers always called their sabers "window-bars"; and why shouldn't they, since a saber, so long as it is unsharpened, is no better than a "window-bar"—whether made of iron or of steel, makes but little difference.

saluting, have always attached extreme importance to the study of its practical employment. They have even laid down sundry original rules, full of sound sense, as is generally the case with whatever has been evolved under the pressure of a constant necessity.

Among the mountaineers of the Caucasus, for example, they begin, as a kind of child's game, by practicing the cutting of a thread of running water. Isn't that a curious thing? But among these primitive people observation operates otherwise than with us. The savage only observes many things which would escape the notice of civilized men for ages, and notably this: that it is only the blow, crookedly delivered on water, that produces a splash.

And that is only the beginning of a course of instruction which is continued afterwards by life-long practice and by cutting exercises upon objects of various kinds.

M. DRAGOMIROFF.

General DRAGOMIROFF, in quoting DE BRACK as an authority in favor of the employment of the lance, seems to have overlooked the very important remarks on the subject, contained in the post-face to DE BRACK'S work on "Cavalry Outpost Duty," which are as follows:

"I have already told you how lancers should attack, but have not instructed you how to attack them; to an officer of intelligence the first instruction gives the key to the second. Still, a few words on the subject may not be amiss.

"Lancers should charge in compact, and retreat in dispersed order. In attacking them, carabineers should act as they do when dealing with cuirassiers; that is, form in column and pierce their center. Once in their midst, the carabineers must close with them, hand to hand; endeavor to crowd them together, and press them back in a confused and inoffensive mass as far as possible. Thrust; thrust; always thrust! The lancers, jumbled together, can neither parry nor point, and one of two things will inevitably happen: either they will throw away their lances in order to draw their sabers—in which case you will fight them with equal chances—or they will endeavor to hold on to their lances, in which case you will get them very cheaply.

"In the lancers of the Imperial Guard the flank files did not carry lances. I remember two instances in 1814 (at Hoogstraaten, near Breda, and at Port-à-recein, near Lille), where we fought the Russian and Prussian lancers, who, like ourselves, were endeavoring to hold on to some narrow roads, bordered by deep ditches. I placed at the head of my columns our intrepid carabineers, and ordered my lancers—who had put their lances in the boots—to follow, saber in hand; as soon as we forced an entrance into the crowded masses of our enemies, our success exceeded our highest expectations, as we used our sabers mercilessly without the enemy being able to harm us."—[EDITOR OF JOURNAL.

INDIAN CAVALRY MANEUVERS, 1891.

[Extract from Military Correspondence of London *Times*, February 4, 1892.]

MEERUT, December 19th.

The cavalry exercises and maneuvers, which have lasted about a month, are over to-day, and Brigadier-General LUCK, the Inspector-General of Cavalry in India, may be congratulated on their success. Thirteen cavalry regiments were engaged—four British, the Fifth Royal Irish Lancers, the Sixteenth Lancers, the Eighteenth Hussars and the Seventh Dragoon Guards, and the following native regiments: The Second Bengal Lancers, the Third Bengal Cavalry, the Fourth Bengal Cavalry, the Sixth Bengal Cavalry, the Seventh Bengal Cavalry, the Eighth Bengal Cavalry, the Tenth Bengal Lancers, five squadrons of the Central Indian Horse, four squadrons of the Gwalior Imperial Service troops, and the "A," "C," "Q" and "T" batteries of Royal Horse Artillery, also a novelty in the shape of a detachment of sappers mounted on mules. Unfortunately glanders appeared in the Eighth Bengal Cavalry, so that this

regiment had to be sent out of camp, and could not take part in the final maneuvers.

The exercises were divided into two portions; the one, of some three weeks' duration, consisting of drills and work against a marked enemy at Aligarh; the other portion, from the 11th to the 17th of December, comprising maneuvers carried out as if on active service.

Before describing the exercises undertaken by the cavalry, I will briefly refer to the camp at Aligarh. For those who have not seen a camp in India it is difficult to imagine such an immense canvas town as was there created. The camp was divided by a broad central street, two miles in length, lined on either side by officers' tents, the lines of the horses and the tents of the soldiers stretching away on either side of this central thoroughfare, while still further away were the encampments of followers and sayces. The lighting at night was done by each officer hanging a lamp on to a pole outside his tent, so that the central street was well lit up. The tents inhabited by the officers were double, as a protection against the sun, but were nothing approaching the sort of tent that was taken about in the old days of luxurious Indian life.

The fighting against flag enemies undertaken from Aligarh was interesting, the various squadrons being represented by detachments of ten men, each detachment of men being provided with a disc, painted red on one side and white on the other, the first line of a division or brigade being represented by squadrons with the red disc showing; the second line and reserve by squadrons with the white disc showing.

The command of a flag force is somewhat difficult to carry out to perfection. A leader must not mind conniving at his own defeat. To explain what I mean: A squadron of a flag regiment should not work quicker than a squadron of ninety men and horses, but the flag group can wheel about and get into fighting position in far less time than a real squadron. Thus a flag enemy leader is always tempted to secure victory or ward off defeat by moving his pawns on the chess-board quicker than is allowed by the rules of the game. It was observable that this was done at Aligarh, but, taken as a whole, there is no doubt that the flag enemy is a good substitute for a real enemy, and the device was of great value in instructing the various leaders in their work. Each day some men remained in camp to rest and provide the brigade horses for the flag enemy.

For the purposes of the maneuvers the cavalry were divided into two divisions—Northern and Southern. The Northern, consisting of twenty squadrons and one battery, was under Colonel BULLER, Central Indian Horse, as divisional leader, with Colonel GRANT in command of the First Brigade, and Colonel CLIFFORD, Second Bengal Lancers, in command of the Second Brigade, Colonel FRENCH acting as chief umpire of this division. The Southern force consisted of twenty-eight squadrons and three batteries of horse artillery, the whole under Colonel COOKE; the First Brigade under Colonel JENNINGS, Sixth Bengal Cavalry; the Second Brigade under Colonel GOUGH, Eighteenth Hussars; the Third Brigade under Colonel MACPHERSON, Fourth Bengal Cavalry; Colonel YEATMAN BIGGS commanding the artillery, and Colonel the Earl of Dundonald acting as chief umpire of this division.

The ground selected for the maneuvers was about eighty miles long, by from twelve to thirty miles broad, bounded on one side by the river Jumna, and on the other side by the East Indian Railway. It contained many villages, and also canals and a river, and provided a typical Indian country, well adapted to the concealment of large bodies of cavalry, and presenting splendid battle grounds on which the qualities of the contending horsemen and their leaders could be roughly measured; at all events, as much as is possible in peace maneuvers, when the great factor of courage must of necessity be left out of the reckoning.

The general idea given out for the maneuvers stated that an army corps was moving on Delhi, covered by the Southern Cavalry Division as a screen. The Northern Cavalry Division was supposed to have advanced south from Meerut, with the object of piercing the screen of the Southern Cavalry, and finding out the numbers and disposition of the enemy beyond.

On the 11th of December the maneuvers commenced by the Southern Division forming a cavalry screen, and advancing northwards in this formation. There is not space enough to describe minutely all the various skirmishes and combats between the forces, with the detail connected with their halts and bivouacs, interesting though such a description would be. I will, however, give a rough idea of some of the work done, and the tactics followed. Take, for instance, the Eighteenth Hussars, which formed the left portion of the Southern Cavalry screen. They left the camp on the morning of the 11th at 7 and arrived at their halting place for the night at 8 P. M. In a straight line measured upon the map they marched *about forty-four miles, but the distance actually covered, as they* were performing scouting duties, must have been at least ten miles more—say fifty-four miles. On arrival at the halting place for the night the officers and men bivouacked, and as the mules with the blankets did not arrive, they went without them; a considerable deprivation, as the nights in this part of India are now cold. The horses also had no hay that night, and received as a total ration during that day ten pounds of graim (a sort of pea). The next day the Eighteenth Hussars started at 8 A. M. and marched a distance which measures thirty-six miles on the map, but the distance gone over was in reality probably more like forty-six miles; then they took part in an action, and got into camp at Ghaziabad at 10 P. M. The horses again received only their ten pounds of graim, without hay. The baggage mules also were again not in with the blankets. It will be seen that the Eighteenth Hussars in two days covered about one hundred miles of country—no mean performance with the choking dust which arises whenever cavalry moves—besides taking part in the scouting and fighting. The horses are Whalers (Australian). There were, I understood, one or two deaths and a good many casualties amongst the horses of the Eighteenth during their

hard work; but deaths and casualties are the price paid for efficiency, and no cavalry can be considered efficient that limits its peace maneuvers to the capacity of the weakling, instead of weeding out the weak and bad constitutioned horses by work such as will have to be faced on active service.

General LUCK's standard of a good cavalry regiment is its efficiency for real work, not measured by its capacity to trot or canter past on fat horses, or to do a short, slow exercise and then home, but by its capacity to do real work in the field; and he does not mind making the sleek, fat condition barrack-yard school grumble, of which school there are now very few left in the cavalry, nor does he shirk the responsibility of killing off weak horses by his peace maneuvers if they cannot stand the work.

With regard to the drill, all the squadrons worked in four divisions, now called troops, a formation that seemed handy. When the cavalry were working in large bodies, and notice had been given of the vicinity of the enemy, the order was given "to form preparatory formation," Brigadier So-and-So's brigade leading; Brigadier So-and-So's brigade echeloned on the right flank, Brigadier So-and-So's brigade echeloned on the left flank.

The leading brigade at once formed line of squadron columns at deploying intervals; the other brigades formed in echelon on either flank of the leading brigade at 200 yards to the rear, and fifty to 100 yards from its flank. The batteries formed in rear of the center brigade. This position of the batteries was altered during the maneuvers to a position in front of the leading brigade, so that the guns might get into action quicker.

As soon as the disposition of the enemy is reported, the guns advance to a good position from which to fire on the enemy, and after the front line has completed its maneuvering, to gain the enemy's flank—that is, the flank furthest from the guns—the order is given, "Form for attack!" when the brigade or line in rear of the exposed flank will be ordered to reinforce with a named number of squadrons. These squadrons are taken from the inner flank of this brigade, and gallop up and join the leading line. The remainder of this brigade will then become the "support"; the other brigade—that echeloned on the protected flank—is ordered to give a certain number of squadrons in direct support, the remainder of the brigade dropping back to its position as the reserve, either covering the interval between the first line and the support, or echeloned on the protected flank from 350 to 400 yards distance from the leading line.

If the enemy breaks through the leading line, the direct support squadrons, which are scattered in rear of it, in a rough line with the support and outflanking the leading line on the protected flank, will drive him back.

As soon as the attack is delivered, all the lines in rear halt at the proper distance and watch the course of events. This is in substance roughly the form of attack now under trial by the Indian cavalry. It may be here remarked that a very considerable use is made of the whistle as a means of calling attention to commands or signals.

On the 16th the Northern Cavalry retired over the river Jumna, pursued by the Southern Cavalry, and destroying the bridges before the Southern Cavalry arrived. It was intended to swim the Southern Division across, but finally, owing to the quick-sands on the margin of the river, only a portion of the force was allowed to swim over. A troop of the Central Indian Horse, under Lieutenant GRANT, whom I closely observed, dismounted from their horses, stripped and swam with their horses across, without hitch or delay, in seven minutes from the time of dismounting; a very good performance, but then the Central Indian Horse is renowned for its smartness and efficiency. The saddlery was to have been taken over on a raft, made by the detachment of native sappers, of inverted earthenware jars, but as time pressed, this portion of the arrangement was not strictly adhered to.

Sir FREDERICK ROBERTS was out daily with the troops, riding long distances and taking great interest in the maneuvers. His final judgment on the result of any combat about which there appeared to be some divergence of opinion was frequently invoked by the Umpire-in-Chief, General LUCK, and it invariably commanded the respectful approval, as well as silent acquiescence of those present. Whilst I am referring to Sir FREDERICK ROBERTS, I may say that I heard on all sides the wish that he may stay on in India in his present high command. It is impossible to hear him talk with the native soldiery in fluent Hindustani, as I had the privilege of doing on more than one occasion, without remarking the extraordinary influence his personality has for these impressionable men. In every regiment he knows many of the native officers by name, his wonderful memory for faces and names assisting his kindness of heart to gain for him an ascendency over the native army, which must be seen bit by bit, as I have seen it, or heard story by story, as I have heard it, to be thoroughly realized. It may be said with truth that the whole army, British and native, would, if he led them, follow with an enthusiasm which no other man could rouse. Such is the power of a sympathetic nature, when joined to the halo of great achievements in the service of his country and personal valor. When one thinks of all that this quiet, unassuming man has done for India, the scientific frontier he has so largely assisted to create; the native army he has brought to so high a state of efficiency; the great development in artillery and rifle practice which has taken place since he has had supreme command, one can feel no surprise that the Government is finding some considerable difficulty in picking out a worthy successor.

The maneuvers were over on the 17th, and after a day's rest the march-past took place to-day. It was indeed a grand sight; the cavalry were formed up in line, with the horse artillery on the right, and stretching away across the plain for two miles in front of the saluting point.

Sir FREDERICK ROBERTS was received with a general salute, and was joined on the extreme right of the troops by a large and brilliant staff of officers, British, native and foreign, amongst whom

were conspicuous several native princes in their gorgeous uniforms. The procession, with the Commander-in-Chief on a white Arab at its head, passed slowly down the long line of squadrons. After a minute inspection of their ranks, the Chief and staff took up a position by the saluting point, which was marked by a large Union Jack.

Lady ROBERTS was there, with the Russian Prince GALITZIN in her carriage, who was still full of the kind reception that he had received at the mess of a gallant Highland regiment on St. Andrew's night, and there were also many other persons of rank and distinction. Then began the long defile of the parade. First came the Royal Horse Artillery, the "A" Battery, with its guns and carriages painted khakee color, an experiment tried to hide the position of a battery from the enemy. Some of the horses of the horse artillery showed work, and one could detect they had undergone a good deal of galloping about; but taken as a whole, they were in very good working condition. It is now universally acknowledged that the twelve-pounder gun is too heavy for quick work with a cavalry division, and is a great strain upon the horses. The British cavalry regiments, with their large squadrons, looked magnificent. Of all, I think that I should give the palm to the Seventh Dragoon Guards' horses. The Fifth Royal Irish Lancers were mounted on native Indian-bred horses, which have, I am told, stood their work well. It is hoped, if this experiment answers, that the whole of the British cavalry regiments in India may before very long be mounted on country-bred horses, the endurance of which is above praise. If this takes place, it will be one more element of strength to our troops in India, brought about by the foresight and energy of the military advisors to the Viceroy, in encouraging and improving the native breed of horses. The Gwalior contingent of Imperial Service troops of four squadrons attracted attention. These troops are all paid and maintained free of expense to the Government by the native Prince of Gwalior, for service, in case of need, side by side with the Imperial troops. They appeared to be strong, active men, on wiry horses, led by native officers, one British officer only being attached to the regiment.

After trotting past by squadrons, the troops wheeled about and galloped past by regiments, which was done in splendid style. The troops then wheeled into line of squadron columns at the far end of the ground facing the saluting point and spectators, and advanced, first at the trot and then at the gallop; the whole forty-eight squadrons forming line to the front as if to attack as they advanced at the gallop, the halt being sounded a few yards from the Commander-in-Chief. After a general salute, the Officers' Call was sounded, and Sir FREDERICK ROBERTS addressed General LUCK and the officers in a few clear and well chosen sentences, full of sound advice and criticism. He enjoined the officers specially to take great heed with regard to scouting duties, and good-humoredly advised them to spend less money on polo ponies, as this would enable them to buy more horses to carry out reconnaissance rides and compete for a challenge cup, which he suggested would be presented as an encouragement to this all-important branch of cavalry activity. He ended by thanking General LUCK for his efforts in making the cavalry so efficient, and the officers, both British and native, non-commissioned officers and men, for having so energetically worked in the same direction.

THADDY O'BRIEN.

BY CAPTAIN W. R. HODGES.

Air: Ta-ra-ra Boom de ay.

Thaddy O'Brien was a sergeant gay,
In the U. S. Cavalry,
The fresh recruit would often say,
"I earnestly long to see the day,
When 'neath the sod he's put to stay,
That son-of-a-gun from Dublin Bay,
That sergeant with the 'suparior' way,
My life's a burden every day."

CHORUS: Ta-ra-ra Boom de ay,
Ta-ra-ra Boom de ay,
Ta-ra-ra Boom de ay,
Ta-ra-ra Boom de ay,

Too long were the trousers by a span,
The recruit received from Uncle Sam,
The sergeant bawls as loud as he can,
"*Go and let out yer suspinders man!*"
The hat he drew was much too small,
And failed to stay on his head at all,
"*Stretch it ye spalpeen!*" Thaddy would call,
"*Ye'll niver be a trooper at all!*"

CHORUS.

Now Michael Flynn a soger bold,
At the bivouac fire this dream once told,
"I thought I was dead, to the gates of gold
Me spirit flew like the saints of old,
They opened the dure and in I wint,
St. Peter didn't ask for a squint
At me discharge from the rigimint,
Or where I had served, divil a hint.

CHORUS.

"An Irish angel took me in hand
To show the sights of that beautiful land,
He'd been a soger wid plenty of sand,
Killed by the divils of Sittin' Bull's band,—
The first thing he said—I thought he was lying—
'Av coorse ye'd loike to meet Sergeant O'Brien,
Ye'll find him in there with other galoots,
Ishooin halos to the recroots."

CHORUS.

"In the ortherly room a blazing wid light
Was Thaddy O'Brien, a beautiful sight,
A corpral to help on the left and the right
Ishooin halos in a manner polite.
He handed me mine, I saw 'twas too small,
I gave it him back, and Thaddy did bawl
In a voice so terrific 'twas a terror to all,
"*Stretch it ye blackguard or have none at all!*"

CHORUS.

BOOK NOTICES AND EXCHANGES.

PRINCIPES DE DRESSAGE ET D'EQUITATION. (Second Edition. Revised and Corrected). By James Fillis. Paris, 1891. Large Octavo. 377 Pages. In paper covers. 10 francs.

There has been no dearth of treatises, scientific and otherwise, issued from the press of this and foreign countries, on the subjects of horse training and equitation, and their merits are as varied as the covers in which they have appeared. A few are good, more tolerable only, and many simply the means of exposing the ignorance of their writers.

The systems advocated by the different authors have run the whole gamut, from the complicated instructions based on the practice of the *haute école*, to the simple, if not entirely satisfactory, lariat-choking and tail-twisting methods of the ordinary Mexican, and his apt pupil, the American cowboy.

There is another method than those named, although it may be unknown to some of our readers, by which the horse, without being *conquered* by the application of mere brute force, is made to understand, under all circumstances, what is required of him, learns to balance himself and the shifting weight on his back, and, with any decent kind of treatment, willingly submits to the control of his rider, and shows a desire to execute his slightest wish as conveyed to him through the medium of legs and reins.

The advocate and teacher of this method is M. James Fillis, the title of whose book is given above. The work is based on a practical experience in riding and horse training extending over a period of more than fifty years.

A want of space prevents any extended notice of his clear, sensible and extremely practical course of instruction. It suffices to say that the first part of his book treats of every subject directly or indirectly connected with the perfect training of the saddle-horse; and so clearly and concisely are his instructions given that a single reading of them will almost fix them in one's mind. The second part of the book is devoted to the *haute école* and the fancy gaits and show movements taught therein.

While the author speaks in the highest terms of Baucher as an

instructor in the *haute école*, and as one of the most successful exponents of its principles, he also shows wherein it is glaringly defective for the purpose of teaching actual riding on the road or across country.

In the course of his remarks he says that Baucher, confining himself to the training of the riding hall, never allowed a horse to show his powers in the trot or gallop, and that he (Baucher) could not be induced to indulge in open air riding; from which it may be inferred that although Baucher succeeded in obtaining control over a horse, it was of little practical use except for purposes of display.

The subject of horse training can have but little interest, perhaps, for our cavalry officers so long as the use of the monstrosity miscalled the Shoemaker bit is obligatory in our service; but as a time must come when it will be discarded for a bit with which a horse can be ridden with comfort to him and safety to his rider, preparation for its rational use might be begun now.

Mr. Fillis' book is beautifully printed on clear, white paper, with wide margins, and profusely illustrated, with full page lithographs and photogravures. It is to be hoped that some enterprising publisher will reprint it in English, with the consent of the author, so that it may be brought into more general use.

The Cavalry Association is indebted to the courtesy of Captain Fairman Rodgers of the Philadelphia City Troop, for a bound copy of the work.

JOURNAL OF THE UNITED STATES ARTILLERY.

This is a journal devoted principally to the arm of the service from which it derives its name. It is bound in paper characteristic in color, and makes the third journal devoted to the service, edited by officers of the army. It is published at the Artillery School, Fort Monroe, by authority of the school staff, and edited by officers on duty at the school as instructors. It appears as a quarterly; subscription price $2.50, single numbers seventy-five cents. Three numbers have made their appearance. The table of contents embraces such subjects as Sea Coast Guns and Steel Armor; the Determination of Velocities by Sound; Study of the Effects of Smokeless Powder; Chemistry and Explosives at the Artillery School; the Effect of Accelerating and Retarding Winds; Field Artillery, its Organization, Rôle, etc., by officers whose names are already familiar to our readers as specialists in their arm of the service. While this journal will be of particular interest and benefit to artillery officers, it will prove both instructive and interesting to all officers who desire to keep themselves informed of the changes and improvements in armament and explosives.

THE UNITED SERVICE. Hamersly & Co. 1892.

June: Europe in 1890–91, by S. B. Holabird, Brigadier-General, U. S. A. (retired). Marshal Masséna, by Edward Shippen, Medical Director, U. S. A. The Attack on Pine Ridge Agency, S. D., by

Thomas H. Wilson, First Lieutenant Second Infantry, U. S. A. On Our Army. A Legend of "Old Seabrook." The Boarding, Capturing and Burning of the Gunboat "Underwriter," by D. B. Conrad, M. D. Military Order of the Loyal Legion United States. Rear Admiral Samuel Phillip Lee, U. S. N. July: The Modern War; its Origin, Incidents and Peculiarities, by James Jackson, Major Second Cavalry. Recent War-Ship Construction, by Henry Lawrence Swinburne. Europe in 1890–91 (continued), by S. B. Holabird, Brigadier-General, U. S. A. (retired). Captain Pierre de Landais, Commander of the Continental Frigate "Alliance," by H. D. Smith, Captain U. S. Revenue Cutter Service. The Old Flag Staff, by Albert Tracy, Colonel, U. S. A. General Cullum's "Biographical Register" of the Officers and Graduates of the United States Military Academy, by W. H. Powell, Colonel U. S. A. Andre's Ride. Military Order of the Loyal Legion of the United States, by Surgeon-General John Mills Browne. August: Infantry Action and Our New Drill Regulations, by Carl Reichmann, First Lieutenant Ninth Infantry, U. S. A. Europe in 1890–91 (continued), by S. B. Holabird, Brigadier-General U. S. A. The Ram Question, by Charles H. Rockwell, Commander U. S. N. The Battle of Woerth, by Lonsdale Hale. Brigadier and Brevet Major-General Alexander McD. McCook, U. S. A. September: The Supply of Small-Arm Ammunition to Troops in the Field and on the Line of Battle Under Fire, by D. J. Craigie, Captain Twelfth Infantry, U. S. A. Infantry Action and Our New Drill Regulations (continued), by Carl Reichmann, First Lieutenant Ninth Infantry, U. S. A. Sir John Franklin, by Henry Elliott. Europe in 1890–91 (continued), by General Holabird. What the Fleet Surgeon Saw of the Fight in Mobile Bay, August, 1864, Whilst on Board the Confederate Ironclad "Tennessee," by D. B. Conrad, M. D. Fort Sheridan, by H. R. Brinkerhoff, Captain, U. S. A. Military Order of the Loyal Legion of the United States, by ex-Paymaster-General Thomas H. Looker, U. S. N. (retired).

REVUE DU CERCLE MILITAIRE.

No. 23: The Effectives of the English Army. No. 24: The Austro-Hungarian Regulations. The Lines of Water Communication, and the Improvement of Harbors in Germany. No. 25: The Austro-Hungarian Regulations (continued). No. 26: The Austro-Hungarian Regulations (concluded). No. 27: Dahomey (with map). The Fortifications of Switzerland. Railway Construction in Germany. No. 28: First Combats on the Rhine, from the Personal Notes of an Officer. Marching and Target Practice in the Swiss Army. No. 29: Dahomey (continued) with map. The Depot Squadrons of the Cossacks. No. 31: The Divisional Ambulance. The First Combats on the Rhine (continued). No. 32: The Divisional Ambulance (continued) with plates. The First Combats on the Rhine (continued). Modification of the German Regulations for Field Service. No. 33: The First Combats on the Rhine (continued). The Divisional Ambulance (with plates). No. 34: The Divisional Ambulance (concluded). Punishment in the Belgian Army. No. 35: Pneumatic Guns in the United States. The First Combats on the Rhine.

KANSAS COMMANDERY, M. O. L. L. U. S. Papers read before the Commandery.

Antietam and the Lost Dispatch, by J. M. Bloss, Captain U. S. Volunteers. Personal Experience in Organizing Volunteer Soldiers in April, 1861, and Participating With Them in the First Battle of Bull Run, by H. Seymour Hall, Brevet Brigadier-General U. S. Volunteers. Personal Recollections of the Battle of Shiloh, by Leander Stillwell, First Lieutenant Sixty-first Illinois Volunteer Infantry. The Acting Signal Corps, by S. T. Cushing, Major and C. S., U. S. A. Wilder's Brigade of Mounted Infantry in Tullahoma-Chickamauga Campaigns, by George S. Wilson, Captain Twelfth U. S. Infantry. What I Saw and Did Inside and Outside of Rebel Prisons, by O. R. McNary, First Lieutenant One Hundred and Third Pennsylvania Volunteers. The Nicaragua Canal, by Major O. B. Gunn, Civil Engineer. Reminiscences of Services as an Aide-de-Camp with General W. T. Sherman, by John Taylor, Captain U. S. Volunteers.

MILITAER WOCHENBLATT.

No. 47: Souvenirs of Marshal McDonald. Punishments in the English Army. The Danish Fleet. Field Artillery of the Future. Experience with Hard Bread in the French Army. The Supplying of Ammunition. The Question of Secondary Railways. From a Military Point of View. The New Belgian Rifle. The Tactics of the Future. A Comparison of the Most Essential Dispositions of the Infantry Attack and Defense, in the German, Russian, Austrian and French Armies. Notes on the Employment of the Saber and Fire-Arms in the American Civil War. Gymnastic and Shooting Societies in France. Narrative of a Prussian Officer in the Russian Service During the War of 1877–8. The Spring Maneuvers in the Russian Army, 1892. Present State of the Question of Horse Training in the Army. Infantry Target Practice. No. 70: The New Regulations for the Maneuvers of Field Artillery.

JOURNAL OF THE MILITARY SERVICE INSTITUTION. 1892.

July: Smokeless Powder, by Captain Clark. Prussian Great General Staff, by Captain Brigham. Artillery Services in the Rebellion, by General Tidball. Practical Drill for Infantry, by Lieutenant Johnston. French Grand Maneuvers of 1891, by Captain Chester. Practical Workings of Rifle Practice, by General Wingate. Civil War in Chile, by Captain O'Connell. September: The Terrain in Military Operations, by Captain Petit. Artillery Service in the Rebellion, by General Tidball. Modern Drill Regulations, by Captain Richards. Organization of Militia Defense, by Captain Chester. Maneuvers and Kriegs-Spiel, by Lieutenant Barth. Physical Training of the Enlisted Man, by Lieutenant Harrison. Firing from Horse-

back in Russia, Translated by Lieutenant J. C. Bush, Fifth Artillery. The Care of the Organs of Speech, Translated by Captain Max Wesendorff, U. S. Army, (retired).

JOURNAL OF THE ROYAL UNITED SERVICE INSTITUTION. 1892.

June: Military Geography, by Colonel Maurice. Electricity as Applied to Torpedo and Other Naval Purposes, by Lieutenant F. G. Hamilton. R. N. Military Education, by Colonel F. J. Graves, h. p. late Twentieth Hussars. The Places and Uses of Torpedo-Boats in War, by W. Laird Clowes, Gold Medalist and Honorary Life Member of the United States Naval Institution. July: Modern Aerial Navigation, by Captain Fullerton, R. E. The Late War Game in the Open, by Major E. Sullerthwaite. Combined Tactics, by Colonel H. M. Bengough, C. B. August: Ambulance Work and Material in War, by Major John Furley. The French Maneuvers of 1891, by Major G. F. R. Henderson. The Dimensions of Modern War-Ships, by Captain S. M. Eardley-Wilmot, R. N.

PROCEEDINGS OF THE UNITED STATES NAVAL INSTITUTE. No. 62.

Prize Essay for 1892: "Torpedo Boats; Their Organization and Conduct," by Wm. Laird Clowes. Cellulose and its Application as a Protection to Vessels, by J. M. Cheneau. Official Report on the Behavior of the U. S. S. Baltimore, by Captain W. S. Schley, U. S. Navy, Commanding U. S. S. Baltimore. Electric Welded Projectiles, by Hiram Percy Maxim. The Influence of Range Finders Upon Modern Ordnance. Gunnery, and War-Ship Construction, by Lieutenant Albert Gleaves, U. S. Navy. Notes on the Date of Manufacture of the Three Guns at the U. S. Naval Academy, Captured in Corea by Rear-Admiral John Rodgers, by Thomas Wm. Clarke.

PROCEEDINGS OF THE ROYAL ARTILLERY INSTITUTION. 1892.

June: Some Notes on Applied Field Fortification. Operations of the Irrawaddy Column, Upper Burmah. Field Artillery Fire. Notes of Lectures on Artillery in Coast Defense. Notes on Egyptian Artillery. July: The Battle of the Velocities. Achievements of Field Artillery. August: Fire Discipline; its Necessity in a Battory of Horse or Field Artillery, and the Best Means of Securing It. The Organization of a Garrison Company. Achievements of Field Artillery.

JOURNAL OF THE UNITED SERVICE INSTITUTION OF INDIA.

May: A Musketry Signaling Dummy. Safety Arm Rack, for Use in Barrack-rooms, Guard-rooms, etc. The Capture of Noisseville. Notes on the Attack Formation of the French Army. Medical Services in the Field. June: Officers and Their Weapons. The Higher Training of Infantry Native Officers. Should Richochets Count on the Range.

THE PENNSYLVANIA MAGAZINE OF HISTORY AND BIOGRAPHY. July, 1892.

The Battle of Germantown Described by a Hessian Officer. John Claypool's Memorandum Book. Extracts from the Diary of Nathan Sellers, 1776–1778. Letters of Lieutenant John Richardson, 1776. A Letter of Miss Rebecca Franks, 1778.

OUR ANIMAL FRIENDS. August.

Road Making in Civilization. The Pleasures of Observation. Vivisection in Denmark. The Spirit of Sport. The Cry of Mad Dog. The Rights of Animals. Rosa Bonheur at Home.

OUTING.

June: The Maryland National Guard, (concluded), by Hansen Hiss. September: The Military Schools of the United States, by Lieutenant W. R. Hamilton, U. S. A.

FOOD. July, 1892.

Our Cooking Club. Food and War. The Nutritive Values of Food. Cool Drinks for Hot Days.

IOWA HISTORICAL RECORD. July, 1892.

Henry Dodge. The Old Pioneer. Men Who Made Iowa. War Memories. Indian Names.

THE NORTHWESTERN GUARDSMAN. Monthly. Portland, Oregon. July, August and September, 1892.

REPORT OF KANSAS STATE BOARD OF AGRICULTURE. March 31, 1892. F. Mohler, Secretary.

THE WESTERN SOLDIER. Monthly. San Francisco, California. July and August, 1892.

THE INVENTIVE AGE. Weekly. Washington, D. C.

PRINTERS' INK. Weekly. New York.

BROAD ARROW.

JOURNAL

OF THE

UNITED STATES CAVALRY ASSOCIATION.

VOL. V. DECEMBER, 1892. NO. 19.

CAPTAIN CRAWFORD'S LAST EXPEDITION.

By Lieutenant W. E. Shipp, Tenth Cavalry.

IN the United States Army Register for 1887, we find the following entry: "Died—Captain Emmett Crawford, Third Cavalry, January 18, 1886, near Nacori, Mexico, of wounds received January 11, 1886, in an attack made on his command of Indian scouts by a force of Mexicans."

The circumstances attending his death were so sad and so peculiar, and the character of Captain Crawford was so elevated and noble, that the story of his last expedition possesses a mournful interest for those acquainted with it.

It was the lot of the writer to be a member of this expedition, and to be thrown into intimate association with him, and so to learn to know and to love him; to witness his fall and death; and finally to see his remains buried in the land of strangers—of those who had killed him while he was trying to help them. It is the fact of having had these opportunities, together with the desire to pay a tribute to the memory of one so worthy to be classed among our heroes, that furnishes the reason for writing this account.

What is generally known as Geronimo's outbreak led to the cir-

U. S. Cav. Ass'n. Editor.

cumstances which resulted in the death of Captain CRAWFORD, and it will therefore be necessary to begin our story by a brief account of that outbreak.

In May, 1885, a large portion of the Chiricahua and Warm Spring Apaches, then united as one tribe, without cause left their reservation at Fort Apache, Arizona. NATCHEZ was their hereditary chief and, being a man of ability in addition, was the real leader; the son of old COCHISE, who was for many years the terror of the southwest, NATCHEZ was worthy of his father. GERONIMO was the medicine man and orator of the tribe. He was not a great warrior; but, like SITTING BULL in the North, his influence was powerful among his people. A man of diabolical appearance, and with a character to correspond, he always appealed to the bad side of the Indian nature; and they, like too many people in this world, generally listened to him in preference to better men. By some chance GERONIMO was always credited by the whites with being at the head of the renegades; this error is of so little importance that, for the sake of convenience, we will adopt it.

The Indians at once entered upon a career of murder and pillage, embracing in their zone of operations large portions of Arizona and New Mexico in the United States, and Chihuahua and Sonora in Old Mexico. The theater of war was so rough and barren that it was with great difficulty that they were followed at all by the troops. Fitted by nature and by long experience for such warfare, and finding plenty of food by stealing cattle and horses, they laughed at their pursuers and continued to spread desolation and terror wherever they chose to go. The broken down horses and the ragged and worn out soldiers showed the work the troops had been doing—work discouraging and doubly hard on account of the almost total lack of success.

Seeing that the efforts of the regulars were fruitless, General CROOK, the Department Commander, turned to a plan which had long been a favorite one with him: the employment of Indian scouts to subdue their own people. The hostiles, or "broncos," as they were generally called, had made their headquarters in the great Sierra Madre Range in Mexico, where they had a safe base for operating both in our country and in Mexican territory. A treaty was now made in Washington, which allowed our troops to cross the border, but it had the great drawback of not allowing us to establish any supply camps in Mexico.

Under General CROOK's plan two expeditions were organized, composed mainly of scouts, and commanded by Captain WIRT DAVIS, Fourth Cavalry, and Captain EMMETT CRAWFORD, Third Cavalry. The latter had been recalled for this duty from Texas, where he had just gone with his regiment. He had entered the army after the war from the volunteer service, and had since been almost continuously in active service on the frontier, taking part in most of our great Indian wars, and making for himself a reputation for bravery and devotion to duty not surpassed by that of any officer of the army. Though he had distinguished himself in the northern campaigns against the Sioux and others, yet it is probable that his service in Arizona had been still more valuable. In 1883 he had commanded the scouts in General CROOK's expedition into Mexico, the first expedition ever organized for a campaign against Indians in that country.

Returning from this duty, he was placed in police charge of the San Carlos Reservation, where he had entire control of the Indians lately on the war-path, and where he also kept order among the other turbulent elements. Constantly opposed by employés of the Interior Department and other interested parties, his final overthrow of his enemies and the exposure of their frauds, led to a lasting change in the administration of affairs on the reservation; a change for which the people of Arizona have yet cause to be thankful. Captain CRAWFORD had a thorough knowledge of Indian (especially Apache) character; and he knew personally a great number of the men of this tribe. This knowledge, together with his high character, gave him great influence with them. They knew from experience that they could believe him and trust him; he was kind to them, yet never allowed familiarity; his pure life, his devotion to duty and his fearlessness in the discharge of it, won their respect. Hence he was peculiarly fitted to command them when they took service under the Government.

The two expeditions sent into Mexico were as successful as could have been expected, each capturing a number of squaws and children, and breaking up the camps which had formed the homes of the "broncos." The wearing-out process seemed to furnish the only hope of subduing them; this process, however, promised to be long and somewhat tedious.

In the fall the commands were brought in and thoroughly reorganized. It had been necessary to send out the first expeditions rather hastily; now time was taken to more carefully select the scouts, and to more thoroughly equip the commands. The commanders remained the same, but some changes were made among the other officers. Captain CRAWFORD chose the White Mountain Apaches and the friendly Chiricahuas as his scouts, because they

were mountain Indians, and were less civilized than the other tribes, and therefore, in his opinion, better fitted for the work to be done. The Chiricahuas were part of the tribe then on the war path, and had themselves been at peace only about two years. No soldiers were to be taken. The peculiar material selected was believed to be that best adapted to the task of following GERONIMO's people into their retreats in the terrific fastnesses of the Sierra Madre, where it was hoped to surprise them and compel their surrrender. Surprise was absolutely necessary to success; once aware of the proximity of foes, the hostiles would scatter and render it impossible to follow them. Indians of other tribes and soldiers were not believed to possess the skill and endurance necessary to surprise the vigilant Chiricahuas; Captain CRAWFORD in his previous expedition had found the soldiers he had with him a burden.

The great risk taken in trusting so largely to relatives of the hostiles seemed justifiable, as they alone knew the haunts and habits of the enemy. Many gloomy predictions were made about their treachery, but the many eager offers of service by the young officers in the department showed that they at least were not daunted by the prospect. The selections made were First Lieutenant M. P. MAUS, First Infantry, and Second Lieutenant W. E. SHIPP, Tenth Cavalry, to command scout companies: Second Lieutenant S. L. FAISON, First Infantry, to be Adjutant, Quartermaster and Commissary; Dr. T. B. DAVIS, U. S. Army, to be Surgeon. One hundred scouts were enlisted at Fort Apache, and started for Mexico on the 18th of November, 1885. But before we follow the command on its march it will be necessary to take a look at its organization and personnel.

Two white chiefs of scouts assisted the officers, their principal duty being the daily issue of rations—daily, because the scouts would always eat up at once whatever was given to them. One of these men, HORN, also interpreted from Spanish into English. CONCEPCION, an old Mexican, who had been a captive, was Apache interpreter. The two interpreters were necessary, because no one could be found to interpret directly from Apache. The interpreters were used only in important talks, as the scouts and their officers understood each other well enough for ordinary purposes. NOCHE, a Chiricahua, was the Sergeant-Major, and performed the duties of leading guide and scout. His superior for these duties never existed. The other conspicuous scouts who were always selected for difficult service, were COONEY, CUSO, DUTCHY, WASSIL, KAT-E-KAHN and CHI-KIZ-IN, among the Chiricahuas; NAH-WAH-ZHE-TAH, GOOD-E-NA-HA,

LOCO and JOSH, among the White Mountains. Some of these deserve our notice. COONEY and CUSO were two short, big-chested men, with almost unlimited powers of endurance: in their savage way they were as honest and loyal as men could be, and were splendid scouts. DUTCHY was a known murderer; brutal and mean, but in many respects a valuable scout.

Our captain's treatment of DUTCHY well illustrates his methods with Indians. During the previous summer this man had mutinied and had been sent to Fort Bowie, where he was put in irons. Though he was undoubtedly guilty, Captain CRAWFORD took him again as a scout, but refused to give him the chevrons he demanded. He, however, selected him as his body servant, and trusted implicitly this man who had not long before threatened his life. The result was the establishment of a complete ascendency over DUTCHY, and increased respect on the part of the others, as they saw how little he feared this dangerous man. WASSIL was an old man, a fine scout and the best hunter of all. His claim to fame rests, however, on his escape from the train conveying him to Florida in September, 1886, and his return from Independence, Mo., to Arizona. His long journey through an unknown country, part of it thickly settled, shows what an Indian can do towards finding his way. He is now (1891) a renegade in the mountains; has committed several murders, and seems safe from capture.

NAH-WAH-ZHE-TAH, or NOSEY, as he was irreverently but appropriately called, was a great medicine man—which means that he was a doctor, preacher, conjurer and prophet, all in one. Dressed in an old alpaca coat, ornamented with a pair of shoulder straps, and a pair of cavalry officer's trousers, much too long for his short legs, his first appearance was hardly in keeping with his solemn character and functions. Though undoubtedly a humbug, yet his influence was exercised for good, and rendered the task of governing the wild scouts much easier. Poor old NOSEY is now in jail for killing his own chief, the result of too much tiswin, the Apache intoxicant.

The scouts were not burdened with much clothing—the soldier's blouse, a pair of cotton drawers and a waist cloth, moccasins and a red head-band, constituted the usual costume. Their picturesqueness, and above all, their efficiency, were not spoiled by attempts to make them look like regulars. In these men were apparent the results of heredity and long training. Small and unable to compete with white men in any athletic sports, yet they made us feel like babies when it came to mountain work. The Chiricahuas, especially, were

a never-ending source of wonder. Their knowledge of country; their powers of observation and deduction; their watchfulness, endurance and ability to take care of themselves under all circumstances, made them seem at times like superior beings from another world. No wonder our soldiers could not catch people like these. If our little army of 25,000 were composed of such men, and animated by the proper spirit, it would be unconquerable by the best army now existing in Europe.

The command exercised over the scouts depended mainly upon the moral influence of the officers. Eager as they seemed to be to do their duty, care was taken to avoid trying to force them into ways foreign to their nature and training. They fully understood their work, and except to exercise a general control and supervision over them, no attempt was made to interfere. The temptation to be unduly meddlesome was, however, not strong, for most of the scouts had been on the war-path, which meant that many white men had been killed by them. They were, however, treated with perfect confidence, and soon little thought was given to their former bloody records.

The methods of camping and marching were in conformity with the character of these troops. They cooked their own food without the necessity of supervision, and, on going into camp, they always voluntarily took such precautions as circumstances made necessary. They were ready to start by sunrise, or sooner, and when not in a dangerous neighborhood, much liberty was allowed them, so that they scattered on foot in hunting parties; at the same time they were sure to find signs of the hostiles if the latter were anywhere in the neighborhood. The officers and chiefs of scouts, on mules or on foot, accompanied the scouts to see that no depredations were committed. This free life had many charms, despite the hardships often accompanying it. All supplies and baggage were carried on the pack-mules, these being divided into three big trains, under DALY, HAYES and ROVER, forty-five packs to each train. The aparejo was, of course, the pack-saddle used; each mule, when in good condition, could carry comfortably about 250 pounds. Each train was complete in itself, with its "boss packer," its cargador (the man who arranged the loads and kept everything in repair), its blacksmith, its cooks, and its bell-horse. Seven other men belonged to a train, but no matter what a man's position was—boss or cook—he was expected to help pack. Most of the mules were seasoned to mountain work and the packers were old hands, many of them having spent the best years of their lives in the Government service. There was very

little room for improvement in these trains; if the Government could always count on service as efficient as that rendered by the packers in this campaign, there would be no cause for complaint. The trains have now all been broken up, many of the mules sold, and most of the packers discharged without reward or recognition. It is a pity that these schools for the difficult art of packing no longer exist. Some day, perhaps even in a civilized war, there may be cause to regret it.

From the starting point at Fort Apache the command went to Fort Bowie, Arizona—General CROOK's field headquarters—where it was inspected by General SHERIDAN. After a few words of encouragement from him and from General CROOK, we started on a night march to the Dragoon Mountains, Arizona, as a band of hostiles had been reported in that neighborhood. After a week's scouting, no trail being found, we crossed the Mexican line into Sonora on the 6th of December, heading toward Fronteras. From there we went south to the mining town of Nacosari, and then, leaving all roads, struck into big mountains on the west slope of the Sierra Madre, where there was plenty of hard work. An abundance of deer made the fare good, however, and compensated us for other hardships. Emerging from the mountains, we found ourselves in the valley of the Barispe, a tributary of the Yaqui, and camped at the town of Huasabas, where groves of orange and lemon trees showed the tropical nature of the country. The fruit helped at the Christmas dinners, which otherwise would have been almost wholly made up from UNCLE SAM's army ration. The valley of the Barispe was fertile, but the inhabitants did not appreciate the advantages Nature had given them; they were a miserable people, living in mud huts almost bare of furniture and wanting in every comfort. Wheeled vehicles were unknown; the burro did the freighting for the country. The Apaches had long been a terror, but the Mexicans seemed to regard them as a natural evil not to be gotten rid of by any effort on their part. There were no doctors among them, and during our stay they availed themselves of the services of our kind-hearted surgeon, who was never idle, receiving, however, as fees, only a few oranges or a cheese, sometimes a welcome bottle of mescal.

Huasabas was the scene of our first serious trouble with the Mexicans. One of the scouts, who was drunk, but unarmed, was so badly shot in the face by a soldier that he had to be sent back home. At such times the exertions of the officers alone prevented bloody fights; their duties were dangerous and not at all pleasant.

There were plenty of rumors of outrages still farther south, so we

crossed the mountains in that direction and came to Bacadehuachi, a tiny town for such a name. Here, hid away in these wilds, was a crumbling mission, one of those monuments to the wonderful old priests who, ages ago, braved hardships and dangers to plant their religion among the Indians; sometimes accomplishing much, their zeal too often brought their lives to an end in torture. The priests of that day must have been experts at solving the labor question to have gotten out of the ancestors of the lazy people we saw the work necessary to build this big brick church with its bells, its towers and its wings.

The Apaches had left their mark all through the country we were now traversing. The abandoned and ruined ranches, and occasionally a deserted village; the way in which the people spoke; the dismal stories they told, and the scars they showed, and the general desolation which prevailed in this fertile and well-watered, though rough country, all bore witness to the curse these Indians were. Nacori, the next village, was surrounded by a wall to protect the inhabitants, and the little fields hugging the town showed that they did not dare to go far from it.

Our hardest work was now at hand; the country was getting rougher still, and there was no doubt that the hostiles were not far away. The surplus rations were stored in Nacori, and Lieutenant FAISON was sent to Lang's Ranch, N. M., with two pack-trains for more. Taking DALY'S train, Captain CRAWFORD, marching at night, went into camp about twenty miles to the south of Nacori, and sent out a small party on foot to explore. This party having returned without seeing any signs, it was decided to leave the pack-train in camp with a small guard, and to strike out on foot for the rough country near the forks of the Yaqui, where the Mexicans had reported GERONIMO'S headquarters to be located. Safe in this retreat, where they had never yet been followed, the Indians had been sending out small parties to kill and to steal. Twelve days rations and one blanket for each officer and scout were to be packed on a few of the best mules, the three packers accompanying them being the only men allowed to ride. When the scouts found that we were to walk with them, they begged hard to be allowed to go alone, as they felt certain that the white men could not keep up. But the Captain would not submit to such an arrangement, and they reluctantly gave up.

Before starting, there was a big medicine dance, at which old NAH-WAH ZHE-TAH for the first time unrolled the sacred buckskin which he had worn over his shoulder since he had left Fort Apache.

The ceremonies were impressive, even to the white men. So thoroughly in earnest were the Indians that the solemn dances and marching, the kneeling before the sacred buckskin as it was presented to be kissed, and the old medicine man's blessing of the arms, seemed not meaningless to us as we looked on in silence. With NOCHE and a picked band, equally divided between the Chiricahuas and White Mountains, leading, we started out on the 3d of January, 1886, and camped that night on the Haros River, a large tributary of the Yaqui. On this and the following marches the advanced guard marched far ahead, thoroughly reconnoitering the country; immediately preceding the main body were a few good scouts; Captain CRAWFORD always led the main body, and allowed none of the scouts in it to get in front of him. Fording the river in the morning, we were toiling up and down the steep hills beyond when, about six miles from the river, a small trail of Indians was struck and, soon after, the trail of a big band traveling east. Many tracks of ponies and cattle showed how successfully they had been maraunding. From some slight sign the scouts declared that NATCHEZ was with the band, which meant that GERONIMO was there also. Cautiously as we had been advancing before, it was now necessary to be still more careful, for we were on the trail of Indians whose vigilance never relaxed, even here where they had never been followed. The extreme caution of these Indians was shown by the location of their camps, which were always high up on some well guarded point, whence all the approaches could be watched. It mattered not to the bucks who selected them, how many miles the poor squaws had to carry wood and water. The way the trail ran, concealed as it ascended the hill and exposed to view as it descended, was another evidence that they did not intend to be caught napping. This necessitated many a weary detour, as their watchful rear guard might at any time discover us if we followed the down hill trail.

In the hope that the Indians would establish a permanent camp, we hustled on, thinking it possible that the scouts, as expert as they, might be able to surprise them. From the time we started on this foot scout, the hardships had been great. The country was so rough that it seemed Nature must have made a special effort in that direction. Wearing moccasins whose thin soles allowed the feet to feel every stone of the millions that lay in the path, we had to keep up with our Indians, who had been climbing mountains since they were babies, and whose ancesters had for ages been mountaineers. The days were fairly warm, but the high altitude made the nights bitterly cold. Without shelter and limited to one blanket each, and

with no fires allowed, sleep was almost impossible to all except the scouts, who slept in long rows, with one's head at his neighbor's feet, and seemed tolerably comfortable. We could not start till the advanced scouts had thoroughly reconnoitered the country, so that it was always late in the day when we broke camp. The marches did not end till late at night, when camp, cheerless as it was, was at least better than the endless climbing of mountains or falling over rocks. Often we had to follow some cañon in which lay immovable boulders made slippery by the water which had once flowed over them. Going through them in the dark, it seemed as if we would surely break our necks or dash out our brains, so often did we fall.

Deer were plentiful, but none could be killed for fear of betraying our presence. The blouses were turned so as to expose the gray lining, which was less conspicuous than the blue side, and all prominent marks about the person were discarded. When it was necessary to make fires for cooking, the scouts took charge: in the day time small smokeless fires were made from very dry wood; at night the fires were hid away in some gully or depression, so that they could not be seen a few yards away. In crossing ridges, care was taken never to expose the body against the sky line. Whether in camp or on the march the scouts exercised a constant watchfulness, and no precaution that could possibly be taken was ever neglected. Long habit had made these things come naturally to them. Watching the scouts, one could not help thinking how hopeless was the attempt to catch people like them with men trained and equipped in the manner of our own soldiers. The Apache seems to see everything and to know everything when in the field; no matter how dim a trail may be, it may be made by a few moccasined feet passing over rocks, he follows it by sight as easily as the good hound follows his prey by scent. Soldiers, I mean officers as well, nearly always scorn the precautions that Indians never neglect. Many a time the pursuer has found himself only too glad to escape from the little band he had started out to destroy. We made but few miles a day, so many halts had to be made to reconnoiter, the country was so rough and night marching so difficult. Cattle from which only a few pounds of meat had been cut, were often found lying on the road. On the 6th, the remains of a number were found, the meat having been carried off and no more tracks were seen. On the 7th the trail crossed the Haros and we found ourselves in that terrible country between the Haros and the Satochi, so appropriately called by the Mexicans "Espinosa del Diablo" or "Backbone of the Devil."

On the 9th of January the start was made about noon, and we had already made a good day's march when, at dusk, NOCHE reported that the hostile camp had been located. Fearing that we would be discovered if we delayed, it was decided to march all night and attack at daylight. The mules were far to the rear and had to be left behind; so, with empty stomachs, we began this toilsome march that was to test the strength of the scouts, no less than that of the white men. The doctor remained with the packs, as did also the old interpreter, CONCEPCION, who was worn out and unable to keep up. His absence was, afterward, a source of much trouble. During all this dark night we climbed steep mountains covered with loose stones, or struggled through gloomy cañons, following our Chiricahua guides, who seemed perfectly at home. Sometimes we almost despaired and felt like succumbing to the fatigue that nearly overpowered us; but at such moments the thought of what dawn should bring buoyed us up and revived our drooping spirits.

At length, just before daylight, we drew near the high, rocky point where the camp was said to be, and the command was divided so as, if possible, to surround it. After some delay we crept forward, scarcely breathing as we moved; and, to some of us, there came strange sensations, as in the dark, still night, we thought of the isolation of our position, for, in this wild and unknown region, we were led on by allies who had often proved how crafty and bloodthirsty they could be. But success seemed almost assured, and exultation was taking the place of these feelings, when some burros in the herd of the hostiles began braying and, like the geese of ancient Rome, aroused the camp to a sense of its danger. Some of the "broncos," running out to try and carry off their stock, were fired upon by the scouts, who then rushed into the rocks near by and opened a lively fusillade, accompanying it with their shrill cries of defiance. Answering shots came from the camp, close at hand in a cluster of large rocks, that we afterward saw formed a stronghold capable of defense by a very few men. The behavior of the scouts at this juncture was very disappointing. A rush into the camp would have insured the capture of the squaws and children at least, probably after a bloody fight. But they scattered through the rocks and, deaf to all appeals, allowed themselves to be held in check by the fire of the hostiles, who finally escaped in the darkness, leaving behind all their stock, provisions and blankets. The officers could do nothing, for Apaches always fight in their own way, and instead of following one who tries to lead them to a charge, they look upon him as a fool and unworthy of confidence. In this case it was impossible for us to tell friends from foes; every time I myself attempted

to shoot I was stopped, because I was about to shoot a scout; at last, in desperation, I fired two shots at some figure dimly seen. Who he was I never knew, for I missed him.

In this affair one "bronco" was slightly wounded. We suffered no casualties whatever. Soldiers in the place of the scouts would have behaved much better, but then a sufficient number of soldiers could never have been gotten so close without being discovered. Daylight before the end of the skirmish might have changed matters somewhat, but when there was light enough to see, the band had all escaped and were scattered through the mountains, and the scouts, worn out by eighteen hours' continuous marching, were no longer able to follow. It would have been useless to do so anyway, for once aware of our presence there would have been no chance of catching the hostiles until they had again settled down.

From what I saw of the Chiricahua scouts on this occasion, and subsequently when we had talks with the Indians, I am satisfied that though they fired a good many shots, yet they had little desire to kill, in spite of their wish to see the war ended by the surrender of the renegades. These men worked too hard and were too faithful under temptation to give any reason to suspect them of treachery. But it does not seem unreasonable to believe that they did not strongly desire the death of people belonging to their own tribe. They had not only been their friends, but some were relatives. Moreover, in their eyes, the hostiles had committed no crime, for they themselves had likewise been on the war-path. They wanted peace, but not at the expense of much bloodshed. The White Mountain scouts were too much afraid of their Chiricahua brethren to oppose them, so they have not been considered in the above statement. It was one of the many difficulties of General CROOK's task that, at that time, there seemed to be no one except these Chiricahua scouts who could follow the hostiles to their retreats in this unknown region.

Disappointment at the result of the fight was, however, soon forgotten in the search for food. Supplies were not lacking, but the white men, exhausted by their long march without food, found little to tempt them in the lean horse meat without salt, and the roasted heads of mescal which lay around the abandoned camp. The meat, toasted on ramrods, was about as satisfactory as pieces of gunny sack, while the sweetness of the mescal soon produced nausea. The exhaustion of the command was shown by the way the men threw themselves anywhere on the ground to sleep. Some scouts were sent back to bring up the party with the pack-mules, but they went to sleep on the road and nothing was heard of the train. In the

afternoon an old squaw came in with a message saying that NATCHEZ and GERONIMO wanted to have a talk outside the camp. From what she told him, Captain CRAWFORD believed that they were ready to surrender; the correctness of his belief was shown by statements made by these chiefs to an officer eight months later, when on their way to surrender to General MILES. The absence of the interpreter, however, compelled a delay, and the meeting was appointed for the next morning. The squaw reported that her people were without food, begged some for herself and departed, leaving us very hopeful for the morrow. Having now nothing to fear from the hostiles and being worn out, the scouts relaxed their usual vigilance and all lay down to sleep by the side of the big fires, which had been built to keep off the bitter cold of the night, which caused much suffering. All the white men and most of the scouts were without blankets or covering of any kind. A heavy fog made the morning of January 11th very obscure and, just as it was getting light enough to see, the Indians shouted out that Mexicans were coming. Lieutenant MAUS, Chief of Scouts HORN and I, who were awake at the time, ran forward to prevent any trouble, at the same time calling out who we were. But shots from the advancing party drove us into the rocks, where the scouts had taken refuge. Some of them had commenced returning the fire, but this was soon stopped.

Our camp lay on the left bank of the Haros River, which was in sight, and was about fifty miles southwest of Nacori. The ridge on which it was located fell off abruptly to the river side in a high, rocky bluff, along the edge of which ran a line of big rocks; outside of these rocks was an open space containing a few scrubby trees. We had nearly all been sleeping in this open space, but the firing caused it to be speedily vacated. In the dim light we could not tell who our assailants were, but an idea soon began to prevail that they were Major DAVIS's scouts who had taken us for hostiles. The thought of being killed by our own friends was agonizing, and we loudly called out the names of the officers on duty with DAVIS's battalion. In a few minutes the firing ceased and the voices of Mexicans were heard crying out. HORN answered in Spanish, and a small party appeared in the open space near us. It had now grown light and the white men showed themselves, while HORN called out to the leader of the band, then about twenty-five yards from us. The scouts still lay hidden in the rocks; they did not trust Mexicans.

Captain CRAWFORD had been asleep when the first alarm was given, and it was not thought necessary to stop and wake him.

When the firing began he, like the rest, ran into the rocks. He now appeared, standing on a high rock, conspicuous above every other object. It is impossible to tell how he viewed the situation, though he must have known that in so exposing himself he ran a great risk, no matter under what circumstances the attack had been made. Thinking, no doubt, that by exposing himself to full view in his uniform, he might save us from being again attacked, he did not hesitate, but climbed the rock and stood waving a white handkerchief in token of peace. In a moment a single shot rang out, followed by a volley. CRAWFORD fell, struck, the scouts said, by the single shot. The Indians returned the fire and, for several minutes there was a hot fight. HORN was wounded by the leader of the Mexicans, who was dropped dead where he stood by a Chiricahua named BENDER, who lay at our feet.

The fall of CRAWFORD was not known at first to anyone except some scouts near him. Going to him, as soon as the news became known, he was found lying senseless at the foot of the rock with a ghastly wound in the side of his head, and his brains scattered over the ground near by. Some Indian had bound his head with a handkerchief, and the man who had shot him was already lying dead not twenty-five yards away. The captain was given such aid as was possible at the time; and then our attention was turned to the puzzling position in which we were placed.

The command had fallen to Lieutenant MAUS, the next in rank, who had to choose between continuing the fight or terminating it as soon as possible by acting strictly on the defensive. The latter course involved two considerations. The first was that, if the Mexicans believed us to be hostile Indians, we could defend ourselves until we could make them understand who we were. On the other hand, if they really knew us, we could demonstrate to them our ability to defend ourselves and show them how useless it was to keep up the fight. There were many good reasons why the offensive should not be taken, the principal one being the doubt that then existed as to whether we were being attacked by mistake or not. The first attack seemed to be due to a mistake. During the progress of the second, there were no means of determining whether the mistake still existed or not. As one looks back at any affair, things have a different appearance to him, and he wonders why he did not see them in their true light at first. In this case many incidents tended to show that the Mexicans were not acting in good faith. But at the time little thought was given to that; for we were under fire, and the situation was so unexpected and puzzling that every point was

not given due weight; in fact, outside of one's individual experience very little was known. Afterward, when the different stories were put together and the ground looked over, calm reflection made us believe that the second attack was no mistake. It was not until nearly two days after the fight that the treacherous capture of Lieutenant MAUS and the interpreter, CONCEPCION, removed all doubt.

The situation was such, however, that had we then certainly known that we were being intentionally attacked, there would have been little choice about our course. The Mexicans were evidently much superior in numbers—two to one it turned out. They occupied a line of hills from three to five hundred yards distant that commanded the ground between us and afforded them a very strong position. At this time we were so far down in Mexico that it afterward took three weeks marching to get us back to the border. The Mexicans were in their own country, and our only dependence was on the scouts, who were so hated, both as Apaches and also as American soldiers, that there would have been no difficulty in securing reinforcements against them unless some amicable arrangement was made. We were entirely without rations and almost without ammunition; to have tried to fight our way out of Mexico would have meant that the command would have had to scatter and make its way home as best it could. This would have made it necessary to abandon our wounded, and probably all the pack trains that were scattered through the mountains on their way to us. Had we not made peace there could have been little doubt that the Chiricahua scouts would have joined the hostiles, who were then in sight across the river looking on.

During the fight a hurried consultation was held between Lieutenant MAUS and myself, in which these points were touched upon. We did not feel sure of the meaning of the conduct of the Mexicans; we had not given up the hope that the hostiles would surrender after all, and we did not wish to abandon the attempt to bring them in. So much had been sacrificed that we felt it our duty to continue the effort, especially as there still remained a hope of success. These reasons have been given fully, because there has been some criticism on the conduct of the command in this affair among both army people and civilians, who seem to think that all we had to do was to attack the Mexicans in their position and avenge CRAWFORD'S death. Their judgment has been hasty and unjust. They have not put themselves in the place of officers suddenly called upon to face a situation unparalleled in the history of the army; in which there lay no alternative between the course adopted and ruin; and which

would have involved the betrayal of the trust reposed in those officers had they tried, with the knowledge they then possessed, to assume the role of avengers.

Our course determined upon, there still remained the task of conducting the defense, at the same time controlling the fire of the scouts and continuing the calls to the Mexicans to stop firing. The party that had advanced so near us was soon disposed of; but the main body kept up a heavy fire from the hills and several attempts were made to flank us, which were, however, frustrated by the scouts. We were strongly posted among the rocks, but the position was entirely open in rear, and would have been untenable had the Mexicans succeeded in getting a party on that side. The shots finally becoming less frequent, we could plainly hear their voices as they called to each other, and their failure to answer us began to be very suspicious. Finally they replied and, when the firing ceased, Lieutenant MAUS and HORN went out to meet a party half way. An understanding being reached, quiet was restored, and we looked after our wounded. Captain CRAWFORD'S case was seen to be hopeless; his wonderful vitality alone prevented his instant death. On examination, one arm was found to be broken near the shoulder, the result of his fall from the rock. One scout was found to be badly wounded through both legs. Two others had slight wounds. HORN was suffering from an ugly flesh wound in the left arm. We had been very uneasy about the party with the mules, but they arrived soon after the close of the fight, bringing rations and other supplies. They had been on the way to us when the firing began, and were then close to the Mexican position. The packers and scouts refusing to proceed, they had taken refuge behind a hill and, fortunately, had not been discovered.

Parties of Mexicans came over to carry off their dead, four of whom lay in our camp, their major and a lieutenant being among them. It is not known how many more were killed. The scouts always claimed at least seven in all. Five men were known to be badly wounded, as Dr. DAVIS dressed their wounds; some of them he thought would probably die.

Looking over the ground and hearing the different stories, we saw that there was little cause to believe that the Mexicans thought we were hostile Indians when they shot CRAWFORD. The man who fired the fatal shot was just twenty-eight paces distant; the Captain had a brown beard and wore his uniform, so that he looked altogether unlike an Indian. The experiences of Lieutenant MAUS, Chiefs of Scouts HORN and HARRISON, and of Hospital Steward NEMECK, likewise confirmed us in our belief. But all lingering doubts were dispelled by the conduct of the Mexicans on the 12th, when they treacherously captured Lieutenant MAUS and CONCEPCION, and compelled them to ransom themselves with six mules. That plunder was their object in attacking us is certain. They saw only a few white men, and the fire of the scouts was so weak at first that they had no reason to believe us a large party.

Our assailants were not regular troops, but were a body raised in the State of Chihuahua to fight the Indians. They had been seventeen days on the road, and had with them no animals except a few burros. Their rations and blankets were carried on their persons. They were a hard-looking set; dressed in cotton clothing and wearing moccasins, some of them rawhide sandals, they had little appearance of being soldiers; but at the same time they seemed well suited to following Indians in a rough country. A temporary, and perhaps irresponsible organization, they would, if successful in killing us, have had little trouble in evading all responsibility for their acts. The locality of their crime would have made the detection of the perpetrators almost impossible. Their version, as published in official reports, shows that they would not have been wanting in excuses. They sturdily claimed that we were in league with the hostiles; that they had been following our trail for days, and that the mules (all marked U. S.), taken as ransom, had been stolen by the Indians from Mexicans. With regard to their following us, it is only necessary to say that their trail which we saw came directly from the east, while ours came from the west; they had never followed our trail at all, but had been guided to us by the light of our fires.

It has been said that the hostiles were spectators during our fight with the Mexicans. How they must have enjoyed it! As their enemies were engaged in deadly strife before their eyes, it must have seemed that Providence was looking out for them, and no doubt crafty old GERONIMO took advantage of the situation to work upon their superstitious feelings, and to encourage them to follow still further their bloody career. It must strike us, too, that it was a strange mischance that caused these two commands to meet at this particular time, and in a country perhaps never before traversed by similar parties. Different as they were, either might have done good work but for the presence of the other.

The experiences of the expedition after the fall of CRAWFORD were strange and interesting; but we will not attempt to tell of them, for the story is long and complicated. We cannot, however,

lose sight of it for a few days longer, though nothing except a brief and incomplete outline of events will be attempted. The camp was moved a few miles on January 13th, and no more was seen of the Mexicans. Negotiations with GERONIMO were reopened, which resulted in the surrender of part of his band, and the promise of the remainder to meet General CROOK on the border, which they did in March. For many reasons the command was obliged to return to the United States, and its march was continued till the supply camp at Lang's Ranch, N. M., on the boundary line, was reached on February 1st. Orders were given by General CROOK for a similar withdrawal of Major DAVIS's battalion from Mexico and, for a time, operations were suspended.

The transportation of our wounded was a serious trouble. Incessant rains not only increased the discomforts already existing, and caused much actual suffering on account of the lack of shelter and clothing, but it also made the rough country almost impassable. The litters, composed of canvas stretched between bundles of canes, had to be carried by hand; the canes were so pliable that the litters were clumsy affairs, requiring eight men to carry one of them. Then the moccasins went to pieces in the wet and left many of us barefoot in this stony region. In a few days, however, DALY's train met us and brought us more comforts. A new litter was then made for the Captain, and as pine poles were now available they were substituted for the canes, and one end of the litter fastened to a mule; on account of the rough trail the other end was still carried by hand. The badly wounded scout was rigged upon a mule and caused but little more trouble.

A week went by without any sign of consciousness or of suffering on the part of Captain CRAWFORD who, gradually growing weaker, on the 18th of January passed away so quietly that the end was not perceptible to those watching by his side. Four days later his body was deposited in the dreary little burying ground at Nacori; the hope that this was only a temporary resting place was soon realized by the action of General CROOK in sending a suitable party to bring his body back to the United States. He was finally buried at the home of his brother at Kearney, Nebraska, where a monument erected by his brother officers now marks his grave.

The killing of Captain CRAWFORD gave rise to much feeling against Mexico and some talk of war upon that country. The matter was taken up by the State Department, but was finally dropped without action on the part of our Government. The reasons for this course were doubtless good, but it is much to be regretted that they

have never been made public; for there is a belief that our country has allowed one of its best officers to be murdered while doing his duty, and has failed to take steps to punish his assassins.

The attack of the Mexicans not only caused the death of a valuable officer, but it also prolonged the resistance of the hostiles for eight months. There is little doubt that they would have surrendered in January but for this affair; it was September before they finally did so. In his report General CROOK says: "There is reason to believe that had he (CRAWFORD) lived, he would have received the unconditional surrender of GERONIMO's and NATCHEZ's bands;" and again: "He was thoroughly known to all the Indians, and had their confidence. It is believed that he was the only white man besides myself who could have induced the hostiles to surrender." When we reflect that after January probably more than a hundred people were killed by these Indians, and when we also consider the incalculable losses in property, both to the Government and to private parties, and remember that during all these months no one was safe in a region containing hundreds of square miles, we can realize that the importance of that little fight is not to be measured by the number of slain.

It would be well if all of us could keep in our minds the memory of this devoted and chivalrous soldier, whose whole life was one long sacrifice, and whose death was the direct result of his efforts to save others. Such characters are not common. Let us try to remember this one as our ideal of what a true man should be. Though we may never be called upon to face difficulties of the kind that confronted him, yet the elements of character that enabled him to overcome them and to win the love and respect of all who knew him, will tell in all walks of life; and though such men sometimes fail, yet the name they leave behind them is worth far more than the greatest success.

CAVALRY UPON THE FIELD OF BATTLE: BY LIEUTENANT-COLONEL PREJENTSOFF, OF THE GENERAL STAFF OF THE RUSSIAN ARMY.

TRANSLATED FROM THE RUSSIAN.
BY FIRST LIEUTENANT GEORGE W. READ, FIFTH CAVALRY.

IV. THE MODERN EPOCH.

OF late campaigns, the most instructive battles in regard to the question under discussion are those of Königgrätz, July 3, 1866, and Mars-la-Tour, August 16, 1870, in both of which the cavalry was concentrated in masses upon the field. An analysis of the cavalry operations in these battles, after our statement of the fundamental rules observed by such great commanders as FREDERICK THE GREAT and NAPOLEON, makes it possible to arrive at conclusions based upon facts.

CAVALRY IN THE CAMPAIGN OF 1866.

In the Austro-Prussian campaign of 1866, we do not observe such considerable masses of cavalry in the opposing armies as in the time of NAPOLEON I. The greater part of the Prussian cavalry was attached to the infantry divisions by separate regiments or brigades, while the main mass of the Austrian cavalry formed a number of independent divisions.

The campaign of 1866 opened with the invasion of Austrian territory by three Prussian armies; the Army of the Elbe and the First Army advanced from Saxony and Lusatia on the north and concentrated at Münchengrätz and Gitschin; the Second Army moved through mountain defiles from Silesia into Bohemia to Trautenau, Braunau and Nachod. Each army comprised several corps. Each corps was composed of two infantry divisions, with artillery and a battalion of chasseurs, pioneers and train; and to each infantry division was added a cavalry regiment of four squadrons. In the First Army, moreover, the Second Corps had a separate cavalry brigade with a battery (VON DER GOLTZ) in addition to the regiments of divisional cavalry. A cavalry corps of two divisions (the first under General VON ALVENSLEBEN and the second under General HANN), comprising five brigades, formed the reserve cavalry (in all forty-one squadrons and five batteries). In the Second Army each corps, excepting the Fifth, had a cavalry reserve, as follows: to the Guard Corps was attached a guard cavalry brigade with a battery (VON BREDOW); to the Sixth, a regiment. The reserve cavalry of the Second Army consisted of a separate cavalry division (General HARTMANN), comprising three brigades: the first, cuirassiers; the second, light; and the third, landwehr; in all, twenty-four squadrons and two batteries.

The assignment of the cavalry in the organization of the Second Army conformed to its anticipated operations in the mountain defiles, in view of which it was attempted to make the corps more independent. In the Austrian army, to each corps consisting of four independent brigades (a brigade usually comprising two line or frontier regiments of three battalions each, a chasseur battalion, and a four-pounder battery), was added a cavalry regiment of six squadrons. The remainder of the cavalry formed five separate divisions: two light (the First, General EDELSHEIM, thirty squadrons, twenty-four guns; the Second, Prince THURN and TAXIS, twenty squadrons, sixteen guns); and three heavy, denominated reserve, (the First, Prince SCHLESWIG-HOLSTEIN, twenty-six squadrons, sixteen guns; the Second, General ZAITSEK, twenty-six squadrons, sixteen guns; the Third, General Count COUDENHOVE, twenty-seven squadrons, sixteen guns). To this must be added a division of Saxon cavalry (General VON FRITSCH) of twelve squadrons and six guns. Bearing in mind that in case of necessity the commander-in-chief of the Austrian army could add cavalry divisions, regiments and brigades to those corps which might need them, nothing can be said against such an organization. We see, indeed, that with the opening of the campaign, the First Light Cavalry Division accompanied the First Corps, designated to operate against Prince FREDERICK CHARLES.

In all the fights preceding the battle of Königgrätz, frequent skirmishes between small bodies of cavalry are noticed; but the participation in battle of more important bodies of cavalry is everywhere absent. At Münchengrätz and Gitschin, where Prince FREDERICK CHARLES had against him the corps of Clam-Gallas and the Saxons, in all about 60,000, the Prussian cavalry took a very limited part, failing even to pursue the enemy after the victory; nor does there seem to have been any effort on its part to establish firm connection with the Second Army.

Neither was the Austrian cavalry distinguished by a special spirit of enterprise; in the earlier collisions it experienced the efficiency of the small-arms fire of the enemy and, thereafter, sought to avoid encounters with the Prussian infantry.

One cannot fail to observe that the Prussian cavalry, although in small bodies, attacked energetically and with great wickedness in all the skirmishes in which it took part. At Nachod two Prussian dragoon squadrons, in view of the Sixth Austrian Corps, quickly formed platoon columns in each squadron, without dreaming of retreating, upon chancing within effective range of artillery fire; afterward they deployed rapidly and bravely attacked the columns of General RAMMING, in order to give time for the first Prussian division of STEINMETZ, approaching from the rear, to issue from the defiles and form in order of battle. The Prussian dragoons galloped upon the cuirassier brigade of Prince SOLMS marching at the head of the Austrians, broke through the first line, and being repulsed, formed again and attacked the enemy anew, thanks to which his advance was checked.

On another occasion, June 28th, at Skalitz, this same Austrian brigade attacked the rear of a force under General STEINMETZ, which was making a turning movement against the left flank of the Austrians. The Prussian infantry turned about and met the enemy's cavalry with the fire of the deployed troops. The brigade of Prince SOLMS was repulsed; taking advantage of the moment, a Prussian uhlan regiment attacked the reserve of the brigade but, in its turn, was forced to fall back. A guard brigade of heavy cavalry with artillery was sent by the Prince of Wurtemberg from the Fifth Corps at Braunau to the support of General STEINMETZ. Upon arriving, it formed on the right flank in order to menace the left flank of the Austrians. This resulted in the retreat of the Austrians, and in securing to the Prussians the defile in front through which the Sixth Prussian Corps and the cavalry of the Second Army immediately afterward passed.

We proceed to an examination of the use of the cavalry of the adversaries at the battle of Königgrätz, where it was concentrated in considerable masses.

The Austrian army occupied a position (see plan) behind the small brook Bistritz, with the troops formed in a broad semi-circle to the west of Königgrätz. The right flank occupied the village of Maslowed; the left, Nieder-Prim and Problus; the reserves were disposed at the villages Chlum, Rosberitz and Wsestar. The Saxon cavalry and the first light cavalry division of General EDELSHEIM

were upon the extreme left flank, and were charged with securing the flank and the lines of retreat to Koniggratz and Pardubitz, and also with resisting the debouching of the Prussians from the bridge at the village of Nechanitz. At the extremity of the right flank, between Sendrasitz and Lochenitz, to observe the crossings of the Trotina and the bridges across the Elbe, was placed the second light cavalry division of Prince THURN and TAXIS. The three heavy cavalry divisions were placed behind the center at the following points: The first, Prince SCHLESWIG-HOLSTEIN, between Chlum and Sweti; the second, General ZAITSEK, in the rear line, to the left of the road Koniggratz, Gitschin; the third, Count CLUDENHOVE, somewhat in advance of the second, behind the Tenth Corps (GABLENZ), which defended the heights of Langenhof; the third division was charged with the support of the Tenth Corps in case of need.

The little river Bistritz, from thirty to forty paces in width, covering the front of the Austrian position to the west, was a great obstacle for the offensive, as even in good weather it was difficult to ford, and in a rainy season was passable only by bridges. On the east, the field of battle was limited by the Elbe, entirely unfordable and having very few bridges. To the northeast, the river Trotina empties into the Elbe; its course is for the most part marshy and therefore it served to partially secure the right flank of the position. The streams Bistritz and Trotina, flowing for some distance parallel, are, in the northern part of the position, between the villages Benatek and Racitz, two and two-thirds miles apart; and this space afforded an easy approach to the right flank of the position. All the space between the Bistritz and the Elbe has a rolling character; in some places it is intersected by ravines, but there are a sufficient number of good roads and cover for troops. Commanding points are found on the line Hradeck-Problus-Lipa-Chlum-Maslowed and Horenowes, whence the ground slopes steeply to the west and north, while the slope to the Elbe is five and a quarter miles in extent. Nearly perpendicular to these crests are the small parallel ridges of Horenowes and Maslowed, whose steepest sides slope toward the northeast.

The villages with buildings of brick or clay, and the groves found at several places on the battle-field, surrounded by roads dug deep into the earth, together with a multitude of ditches, rendered the position quite cut up and not fully suited to cavalry operations. Fields covered with a dense growth of high corn quite concealed the difficulty of passing the obstacles of the locality which presented from afar the appearance of a smooth surface adapted for a cavalry attack.

In the center, the height of Chlum commanded by fifty feet all the country lying in its front and formed the tactical key of the position. The height of Horenowes covered the right flank on the northern side, and the heights of Hradeck and Problus presented solid points of support on the left flank of the Austrian position. While impeding the operations of the offensive against the front and left flank, the position at Königgrätz had convenient approaches on the right flank, the ground in front of which was entirely favorable for cavalry operations.

The action against the Austrians was begun by the First Army and the Army of the Elbe approaching the Bistritz at 7 o'clock on the morning of the 3d of July, deployed on the line from Néchanitz to Bénatek. The Prussian center was charged with forcing the passage of the Bistritz at Sadowa and with the attack of the heights at Chlum. Here the Second Prussian Corps began the battle, the cavalry brigade of VON DER GOLTZ being placed upon the right bank of the Bistritz. The cavalry corps of Prince ALBERT was at first directed to the right flank in the direction of the village of Sucha but, at the first firing, it was brought up to the battle lines and placed on both sides of the road Königgrätz-Gitschin, near the village Dub, behind the center of the Prussian lines. At this time the divisional cavalry of the Second Prussian Army, marching for the most part in advance of its infantry, was directed from the northwest by the shortest roads to the right flank of the Austrian position. The cavalry division of HARTMANN, however, constituting the reserve cavalry of the Second Army, did not receive the order of its Commander-in-Chief in time; it had advanced at day-break in the direction of Gorlitz, hence the new order arrived too late to change its movement.

Such were the positions of the cavalry of the adversaries when the Prussian King gave the order to make a decisive attack. Just as the action began, the cavalry brigade of VON DER GOLTZ was sent to the right flank to the Army of the Elbe, but was immediately afterward called back and placed behind its corps, which met a serious resistance from the enemy. About 10 o'clock in the morning, the division of ALVENSLEBEN was detached from the cavalry corps and moved to the rear of the Army of the Elbe, behind the reserves of which it passed the greater part of the day in complete inaction. Official sources attribute the sending of the division of ALVENSLEBEN to the right flank to the incorrect understanding of orders; but in consequence of this, the center was unnecessarily deprived of so considerable a body of cavalry at the most important moment.

The object of all the operations of the Prussians on the right flank against the Saxons, was to dispossess the latter of the center of the position, but the Saxon cavalry and the light cavalry division of EDELSHEIM, menacing in their turn the right flank of the Prussians, prevented the attack of the latter and thus made it possible for the Saxons to be strengthened upon the heights of Problus. It cannot be said that this Austrian cavalry showed any decisive activity; it maneuvered more with the object of a demonstration, threatening the enemy while taking care not to come near him on account of the efficient small-arms fire.

At midday the attack of the Army of the Elbe and of the First Prussian Army was stopped along almost the entire front, as the Austrians, being at this time of equal strength with their adversaries, showed a strong resistance at all points. In consequence of the expenditure of the reserves and of the engagement of almost all their troops except the cavalry, the situation of the Prussians was becoming more difficult and perilous. The arrival of the main body of the Second Prussian Army, and especially of the First Guard Division of HILLER and the Sixth Corps, relieved the danger of the First Army and Army of the Elbe, and made it possible to renew the battle. The regiments of divisional cavalry, moving in advance of the Second Prussian Army, took part in the fight immediately upon arriving on the battle-field and made a series of noteworthy attacks against both the infantry and cavalry of the enemy. A hussar regiment of the advance guard, approaching Racitz, dismounted in order to attack that village, which was occupied by Austrian infantry, but was repulsed by the troops of the Sixth Austrian Corps; a little further on, the Prussian uhlans and dragoons attacked unsuccessfully some Austrian battalions, which happened to be in disorder; another cavalry attack by three squadrons, north of Horenowes, initiated by General HILLER against a retreating Austrian battalion was also unsuccessful; the battalion formed squares and received the cavalry with volleys.

The Prussian Guards made an almost unimpeded advance against the right flank of the Austrian position. But upon reaching the village of Maslowed, the Prussian infantry was discovered by the Austrian first reserve cavalry division, which immediately moved in double columns by brigade to meet the enemy. The division of HILLER, observing the approach of the cavalry, instead of forming square, deployed and received it with a sustained fire; the Austrian squadrons turned back and retreated in disorder in the direction of Chlum and Swèti. Between 1 and 2 o'clock the Prussian cavalry

brigade of WICKMAN moved upon the line Lochenitz-Nedelist against the second light cavalry division of TAXIS, which was at Trotina, with the object of cutting its line of retreat.

The brigade was formed in two lines, having in the first line a hussar regiment in deployed order; in the second, in echelon from the left flank, a dragoon regiment in line of platoon columns with full intervals. The first Prussian line advanced to the attack, without having ground scouts in front, on account of which the hussars fell quite unexpectedly into a gully, and were almost annihilated before the dragoons could support them. Thus the second light cavalry division of TAXIS arrested the progress of the Prussians but, fearing for the bridge across the Elbe, with the guarding of which it was charged, did not pursue them, and withdrew somewhat to the south.

From what has been stated it is seen that the bulk of the cavalry of the Second Prussian Army was used in small bodies, except the reserve cavalry division, which was at first too far away from the battle-field; upon joining its infantry, this division was placed between the corps and maintained connection both between them and with the left flank of the First Army. In the course of the fight a crisis, disadvantageous to the Austrians, finally appeared, and Master of the Ordnance BENEDEK gave the order to retreat; the cavalry was charged with covering the army departing from the field.

Thus, it was only at the close of the battle that the cavalry was released from inactivity and allowed to show itself. When the retreat of the Austrians was observed by the Prussians, the cavalry of the First Army immediately received orders to advance, which, for want of fords across the Bistritz, could not be done with any great rapidity. The only part of the cavalry corps with the center was the second division, under HANN, which was directed sooner than the others to pursue the Austrians. The first cavalry division, under ALVENSLEBEN, sent by mistake to the Army of the Elbe, was, at this time, on the road from Lubno to Stresewitz. The third light cavalry of HANN's division, formed in line of squadron columns, stretched through Sadowa; upon its right flank was a dragoon, and upon its left a hussar regiment; behind it, at a distance of 1000 paces, followed another brigade (a hussar, a dragoon and an uhlan regiment) of the same division, which crossed the Bistritz at Sowetitz. The retreat of the Austrian infantry was covered upon the right flank by the second light cavalry division of Prince TAXIS, and upon the left by the first light cavalry division of Baron EDELSHEIM and the second Saxon cavalry brigade.

The first reserve cavalry division was at Wsestar, and the third reserve cavalry division was 2000 paces to the east of Stresewitz, when the enemy's army showed itself in separate masses, part south of Stresewitz and part upon the high-road between Lipa and Rosberitz. The Austrian reserve cavalry divisions immediately dashed upon them, and by their self-sacrifice delivered the army from the ruinous consequences which usually accompany the appearance of the enemy's cavalry at such a moment.

Having arrived at Stresewitz, the main body of the Second Prussian Cavalry Division (HANN) was drawn up as follows: In the first line, three squadrons of dragoons; in the second line, a regiment of uhlans, having three squadrons to the right and one squadron to the left of the dragoons; behind them, in echelon from the right flank, followed a dragoon regiment and two squadrons of hussars; the remaining two squadrons of the hussar regiment were upon the left flank of both the leading lines. The cavalry division of ALVENSLEBEN, with regiments far apart, moved also to Stresewitz by a ravine leading to the west of Problus; at the head moved the dragoons of the Guard, and after them, the uhlan regiment of the Guard.

The commander of the Austrian third reserve cavalry division, upon receiving the first news of the approach of the enemy's cavalry masses, ordered his division to attack. The division was formed in three lines, having a cuirassier regiment in the first and second and two cuirassier regiments in the third; the regiment in the second line was in echelon behind the right flank, and the regiments of the third line in echelon behind both flanks in regimental columns. The three squadrons of Prussian dragoons found in advance at first turned back, but afterward, being reinforced, renewed the attack, whereupon there ensued a stubborn cavalry fight, during which the Prussian infantry fired without distinction both upon their own troops and upon the enemy. At the same time, a little to the south, the Austrian uhlans attacked the Prussian dragoon regiment of the Guard, in which skirmish the regiments of ALVENSLEBEN's division took part. The fight was decided by the shock of a cuirassier regiment of the third line of the third reserve cavalry division of the Austrians. The Prussian cavalry turned back to the Bistritz, pursued by the Austrians.

Another cavalry engagement took place almost simultaneously with the foregoing between Langenhof and Wsestar. At Wsestar was the brigade of Prince SOLMS, having three regiments in line of columns, and to the right of it was posted the brigade of SCHINDLÖCKER in brigade columns (both brigades of the first reserve cavalry

division). When eleven squadrons of the second Prussian cavalry division were marching near the high-road in the direction of Wsestar, the brigade of SCHINDLÖCKER attacked them under the strongest flank fire from the Prussian batteries at Chlum. Riding through the intervals of its batteries, the brigade deployed to the north of the road fronting northwest, having a cuirassier regiment in each of its two lines. An Austrian hussar regiment of the First Corps had still earlier been moved along the road, and after deploying to the right, it dashed upon the flank of the Prussian cavalry at the moment when the brigade of SCHINDLÖCKER attacked in front. Both Prussian lines were broken through, and after a hand-to-hand fight were forced back to Langenhof.

Soon after this attack, a Prussian hussar regiment of the First Corps appeared upon the heights between Langenhof and the high-road; the brigade of SOLMS moved against it, having in the first line a cuirassier regiment in line of columns, and in the second line, in echelon, another cuirassier regiment. The Prussian hussars turned back without receiving the attack. The brigade of SOLMS was afterwards assembled upon the low ground to the west of Langenhof and stood for a quarter of an hour under a murderous fire; but the Prussian cavalry did not again show itself either here or at Stresewitz. Beginning at half-past four o'clock in the afternoon, all parts of the Austrian army were in full retreat to the Elbe, except the second and first light and the second reserve cavalry divisions, the two former on the right and left flanks and the latter in the center. The second reserve cavalry division of General ZAITSEK remained up to 3 o'clock at the point at first occupied, to the southwest of Briza, but between 3 and 4 o'clock, after the retreat of the Saxons and of the Eighth Corps, was stretched to Klacow.

Like the other Austrian cavalry divisions, the first light cavalry division of Baron EDELSHEIM was not inactive; it covered the retreat of the troops in the most energetic manner; thanks to it and to the second reserve cavalry division, the left wing of the Austrian army was delivered from a persistent pursuit. The cavalry suffered the following losses in the battle of Königgrätz:

AUSTRIAN.

	Officers.	*Men.*	*Horses.*
Killed	14	303	1055
Wounded	47	301	235
Missing	3	311	850
Total	64	915	2140

PRUSSIAN.

	Officers.	*Men.*	*Horses.*
Killed	6	64	
Wounded	35	457	402
Missing	...	5	
Total	41	506	402

From what has been stated, it is seen that the efforts of the Prussian cavalry to develop the success of its infantry upon the field of battle by attacks upon the retreating enemy, were paralyzed by the activity of the Austrian cavalry; although it must be observed that these efforts were not especially energetic and persistent, and that the Prussian cavalry posted at certain points did not attempt to exert itself at others, but on the contrary, took a waiting attitude entirely unsuited to the occasion. The retreat of the Austrian army across the passages of the Elbe and especially to Koniggratz itself, the gates of which fortress were not opened for a long time, eventually turned into a disorderly flight, and not to have taken advantage of this, not to have driven the enemy to the exhaustion of his strength, was a great error.

In general, in analyzing the use of the cavalry masses of the adversaries in the battle of Koniggratz, one cannot but see that the Commanders-in-Chief of the Prussians and Austrians did not know what to do with them during the action. It seemed as if the Prussian cavalry corps should have been designated for operations at the decisive moment of the battle, while we see quite the reverse: before the battle, while following at the tail of the army, it moved in a concentrated formation; but at the time when all the parts of the First Prussian Army entered upon a battle with an enemy of equal strength, and when the cooperation of the cavalry mass might become necessary at any moment, a whole division was detached from the Prussian cavalry corps and sent to the right flank well nigh off the battle-field.

About 1 o'clock the situation of the First Prussian Army was very serious, not to say critical: the Commander-in-Chief had almost decided to retreat; yet, meanwhile, the cavalry corps stood in complete inaction behind the center, and nobody seemed to think of using it against the left flank of the Austrians with the object of drawing the attention of the enemy to the flank opposite that upon which the Second Prussian Army was advancing.

Nor did the Prussian cavalry of the First Army cooperate with the parts of the Second Army when they were at first sustaining an unequal struggle with the considerable forces of the Austrian right flank.

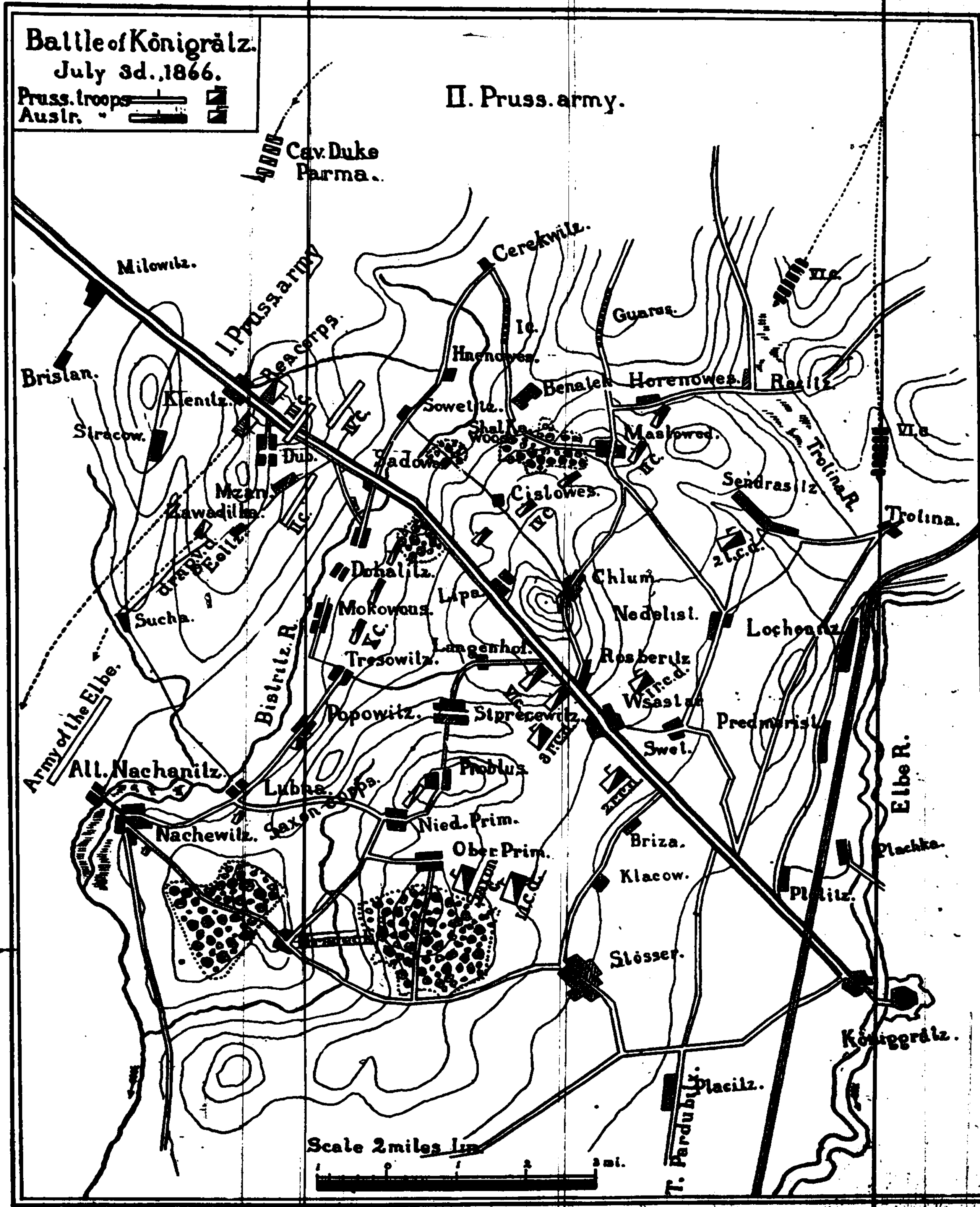
The regiments and brigades of the Prussian divisional and corps cavalry took part at many points of the battle-field, although in a majority of cases with loss to themselves. The regiments and brigades of the Prussian cavalry did not act with the object of supporting a certain infantry body or a battery, or to assist its attack, but were only made use of in case of special confusion of the enemy or of the retreat of some of his troops, and then, without infantry or artillery support to secure their success.

In the operations of small bodies of cavalry, it is only by perfect harmony with the infantry that it is possible to expect fortunate results from a cavalry attack against the enemy's infantry, cavalry, or artillery. As to the Austrian cavalry on the day of Königgrätz, its energy was shown only at the end of the battle when it saved its retreating army. One cannot but think that this energy might have been shown to better advantage if the control of all the cavalry had been placed in the hands of a single chief. The ground most favorable for cavalry operations was that to the north of Horenowes; and if the entire mass of the Austrian cavalry, at the reception of the news of the approach of the Second Prussian Army from the north, had moved to meet that army, there is great probability that the Prussians would have lost the battle.

If it is admitted that on account of the absence of means of observation upon the right flank the information of the approach of the Second Prussian Army was received very late, and that the Austrian cavalry had then no time to check the advance of the enemy at the right flank of the position, why could not the operations of the cavalry upon the left flank have been developed against the Army of the Elbe? General Baron EDELSHEIM, with the first light cavalry division, according to the account from Prussian sources, opposed great resistance to the attack of the Prussian right, but not once did he force the Prussians who had crossed the Bistritz at Néchanitz to fear for their rear. Orders from higher authority, however, greatly hindered and limited the operations of this General.

The Austrian cavalry made such energetic and timely resistance to the Prussian cavalry and infantry during the retreat of its army, that its operations at that time are worthy of imitation.

[*To be Continued.*]



Battle of Königrätz.
July 3d., 1866.
Pruss. troops
Austr.
II. Pruss. army.
Cav. Duke Parma.
I. Pruss. army
Reservecorps
Army of the Elbe.
Milowitz.
Bristan.
Klenitz.
Strecow.
Dub.
Mzan.
Zawadilka.
Sucha.
Sadowa.
Cerekwitz.
Hnenowes.
Sowetitz.
Benatek.
Horenowes.
Racitz.
Guaras.
Maslowed.
Cistowes.
Sendrasitz
Trotina R.
Trotina.
Chlum.
Nedelist.
Lochenitz.
Dohalitz.
Mokowous.
Lipa.
Langenhof.
Tresowitz.
Rosberitz.
Wsestar.
Popowitz.
Stresetitz.
Predmiritz.
Swet.
Bistritz R.
Alt. Nachanitz.
Lubno.
Problus.
Saxon corps.
Nechanitz.
Nied. Prim.
Ober Prim.
Briza.
Klacow.
Plotitz.
Plachka.
Elbe R.
Stösser.
Königgrätz.
Placitz.
T. Pardubitz.
Scale 2 miles 1 in.

THE SABER.

By First Lieutenant E. P. Andrus, Fifth U. S. Cavalry.

WHEN fire-arms were first introduced into armies, it was predicted that the days for the use of cavalry upon the battle-field were ended; and, ever since that time, the question—"Will the saber in future be useless as a weapon?" has risen anew with each successive improvement in fire-arms or powder. And, each time, up to the present, it has been answered both affirmatively and negatively; affirmatively in theory on paper, negatively in practice on the battle-field. I have no doubt that the future answers, so far as the recent improvements are concerned, will, under competent leaders, be the same as in the past.

It is not the present intention to discuss the above question in all its bearings, but to present one side only—the negative, and to confine that to the action of cavalry against artillery and infantry.

Let us look back in history and see what has been accomplished with the saber when the charge has been well timed, well led, and pushed home. To Frederick the Great must be given the credit of first appreciating the true value of the *arme blanche*, and his great leaders—Seidlitz and Ziethen—showed what great results could be attained by its proper use.

In Carlyle's "Frederick the Great" we read that, at Hohenfreidberg, a single Prussian regiment of ten squadrons made a saber charge upon the Austrian infantry and totally routed it, with tremendous loss. Again, at Rossbach, Seidlitz, with seven squadrons, after defeating the Austrian cavalry, turned on their infantry and, by saber charges, changed simple defeat into utter ruin, and with but comparatively little loss to himself.

At Zorndorf, the Russian cavalry was inside the square formed by its infantry. Two divisions of Prussian infantry, separated from each other by some distance, advanced to the attack of the square.

The Russian cavalry leader, seeing this separation, threw his cavalry on the first division and drove it back in disorder.

At Torgau, FREDERICK's last great battle, the late afternoon found the combatants almost intermingled and success doubtful upon which standard to perch. The fighting had lasted since one o'clock and three desperate attacks made by FREDERICK had been repulsed. Just at dusk, ZIETHEN arrived upon the field with his cavalry. He carried the key to the Austrian position by a vigorous saber charge, and the victory rested with the Prussians.

Many other instances, illustrating the successful use of the saber against infantry, might be cited from these wars, but enough have been mentioned to show that it was so used in those days.

From NAPOLEON's wars we will select but one instance. At Marengo, when the retreating French were almost panic stricken from the pursuit by all arms of the Austrians, KELLERMAN, with only eight hundred sabers, fell suddenly upon the flank of the victorious infantry and utterly routed it. Austerlitz, Eckmuhl, Aspern, and many other of NAPOLEON's battles might be mentioned, but this one instance will suffice.

These were, it is true, the days of the smooth-bore muzzle-loader, but they were also the days of highly trained and most efficient infantry. FREDERICK THE GREAT taught his infantry to fire five volleys per minute. The caliber of the old prime locks then used was .69. I do not know the weight of the bullet, or rather ball used, but it must have been heavier than our present bullet; and the shock, upon being hit by one, was sufficient to drop a horse. Yet we read that the infantry of those days were repeatedly successfully charged with the saber, and broken with great loss, while the loss of the cavalry in many cases was but slight. The introduction of rifled fire-arms into the various armies caused a revival of the old theory regarding cavalry's uselessness upon the battle-field in the face of a new weapon; and its influence was so great that reductions were made in the cavalry branch of most European armies, Prussia being almost the only exception, and she increased the strength of both light and heavy cavalry.

Our own Civil War furnished the first extended test of this weapon. I will, however, mention but two battles of our war, where saber charges were successful against unbroken infantry armed with rifles.

The battle of the Opequon was fought and won on September 19, 1864. All day long the fight had raged and the Confederates

were finally driven to their last position in front of the village of Winchester. The long lines of opposing infantry were distant from each other not more than three hundred or four hundred yards, both taking and giving hard blows, with neither gaining any perceptible advantage.

On the left of the Confederate line was an open redoubt containing two guns which were seriously annoying the Union infantry. Its support consisted of MCCAUSLAND's brigade of cavalry posted on its right, between it and the infantry. On the right of and very close to the Union infantry were LOWELL's regular brigade and CUSTER's Michigan brigade of MERRITT's cavalry division. Of the regular brigade there were present at this time one squadron of the First, two of the Second, and two of the Fifth U. S. Cavalry, numbering not to exceed three hundred sabers. This brigade was ordered to charge the battery; the distance, as stated, was not more than three or four hundred yards, the ground sloped gently upward toward the battery and its support, and was as open as a parade ground.

As soon as the brigade moved out to the charge, the battery and infantry opened fire upon them; but, regardless of this, they thundered down upon MCCAUSLAND, swept him away, turned to their right, charged into the redoubt, took the guns and brought them back. As soon as the flank of the enemy's infantry became exposed, CUSTER charged it, supported by the regular brigade which re-formed in his rear as he charged, and rode it down for about three hundred yards, capturing many prisoners and forcing the Confederates to retreat up the valley.

The regular brigade was in column formation when ordered to charge, and deployed under fire of the battery and infantry.

Foreign military writers are now beginning to give the American cavalry credit for saber charges, and Lieutenant-Colonel WILKINSON SHAW, in his last edition, mentions this charge; but he quotes Colonel FLETCHER, who gives seven thousand as the number of sabers engaged in it. The Colonel makes the mistake of including in this number all of SHERIDAN's cavalry, AVERILL and WILSON's divisions with MERRITT's, whereas the records show the charge to have been made by only two brigades of MERRITT's division; the two together not exceeding fifteen hundred sabers.

The other instance I desire to mention is the cavalry charge, or more properly the cavalry charges, at Cedar Creek near the close of the day's fighting. It was also against seasoned, unshaken and, more than that, victorious infantry.

It is well known that, on October 19, 1864, at Cedar Creek, the Union army was badly worsted up to about midday, at which time SHERIDAN arrived upon the field and re-formed his lines, placing MERRITT's cavalry division on the left, and CUSTER's on the right. About 4 o'clock in the afternoon, SHERIDAN ordered a general advance to the attack. The two cavalry divisions, saber in hand, charged the cavalry opposite, scattered them, drove both flanks in upon the center, which was then broken by a magnificent infantry charge; and the Confederate host was driven in utter rout from the field; so badly used up in fact, as never again to give serious trouble in the valley.

More saber charges would probably have been made had our army commanders better understood the use of cavalry on the battle-field. The "Rebellion Records" show a smaller percentage of losses in cavalry when employed mounted than when employed dismounted.

We now come to the days of the breech-loading rifle. The fear of this weapon seemed to be so great in 1866 that the Austrians were intimidated, and did not attempt much with their fine cavalry against Prussian infantry. Neither time nor use had made them familiar with the true battle efficiency of this weapon.

But Italian infantry, still armed with muzzle-loaders, inspired no such fear. At Custozza, a brigade of cavalry, numbering not to exceed two thousand, charged with the saber two divisions of Italian infantry, drawn up in two lines of battalion squares, covering each other's intervals. It broke several of the squares, carried confusion even to the rear of the Italian army, and then rode back again between the remaining squares, receiving their fire as it passed. In spite of its losses, it re-formed out of range and, from that point, watched this infantry, whom it held in place simply by its presence. I do not know what was the loss of the brigade during its double exposure to fire, but it evidently was not sufficient to "wipe it from the face of the earth," as had been so confidently predicted would be the result if cavalry should have the temerity to charge unbroken and unshaken infantry. On the contrary, it remained sufficiently intact to hold in check, and to cause a practical loss, so far as this battle was concerned, of twenty thousand men to the Italians.

In the Franco-Prussian War of 1870–71, we find a few instances, but not so many as we should, of the proper use of cavalry on the battle-field. Had our Civil War been studied before 1870, as closely as it has been since that date, both France and Germany would have derived much greater benefit from their cavalry than they did. The

next war in Europe will undoubtedly furnish many instances of cavalry being used in accordance with principles deduced from its use in the War of 1861–65. There can be no questioning of the fact that the cavalry of 1864–5, both Northern and Southern, has been unexcelled in its efficiency and leaders, by any cavalry that the world has ever seen, for there was nothing it would not undertake.

Probably the most famous cavalry charge during the Franco-Prussian War, was that of BREDOW's brigade at Vionville. It was looked upon as a sort of forlorn hope, for the system of umpiring at maneuvers had fostered the idea that it was certain death and destruction for cavalry to attack unbroken infantry armed with the breech-loader; but something had to be done to check the advance of the victorious French and thus gain time to bring up fresh German troops.

As the circumstances of this charge are so well known, we will not again recount them; but will merely ask attention to its results and to the fact that those best qualified to judge are practically unanimous in the opinion that this episode demonstrates that intact and victorious infantry, armed with breech-loaders, can at times be successfully charged with the saber even by frontal attack.

Prince HOHENLOHE-INGELFINGEN tells us that on that same day another charge of similar nature was made. After BREDOW's charge had been made the Tenth German Corps came up; one-half of the Nineteenth Division advanced towards Mars-la-Tour. Its attack fell directly upon the front of the Fourth French Corps; within a short time the brigade was forced to retire with heavy loss. Annihilation was threatened, when the First Dragoons of the Guard charged the pursuing French, brought them to a standstill, and rode them through, giving the German infantry time to rally. Again the cavalry lost heavily, half the regiment falling; but this loss was the salvation of a brigade, to say nothing of what might have occurred had not the French been checked.

The latest improvements in fire-arms and powders are in the direction of a rifled arm of small caliber and flat trajectory, carrying a bullet of about two hundred and thirty grains, and of a smokeless and noiseless powder giving an initial velocity of about two thousand feet. The result of the combination is an arm of great accuracy and penetrating power, flatness of trajectory (increasing the dangerous zones), and of practically no smoke and but little noise at the instant of discharge.

Of course, attendant upon these improvements, comes the old familiar statement; as in the past, experience alone can decide with what degree of truth.

It is true that the infantry weapon has improved, but the accuracy, range and rapidity of artillery fire has increased in even a greater ratio than has that of infantry fire; so that, in future, the effect of artillery fire upon distant masses of infantry will be greater than in the past.

The man behind the rifle has not kept pace in improvement, in courage, confidence and consequent steadiness, with his weapon: and the smokeless powder has opened to his vision that which the old black powder mercifully hid from his view—the destruction of life and limb. As there is necessarily a limit to every man's endurance, both physical and moral, so must there come a time during a battle, when the loss of life and the cries and groans of the wounded, united with his own bodily exertion and exposure, will unnerve the ordinary man and thus render him an easy prey to cavalry.

We have no reason to suppose that the cavalryman cannot be as well trained in the future as he ever was in the past; and, in the charge, he has his own impetuosity and that of his horse, the noise of the onward rush, the jangling of equipments, and that wild excitement that always accompanies a swift pace on horseback, to draw his mind from the dangers towards which he may be riding and the loss of comrades on either side of him; so that a well led charge is not apt to be more easily stopped now than formerly.

Breech-loaders have so placed infantry as to be always ready to fire; but on that account the supply of ammunition is more apt, than with old muzzle-loader, to run short. Again, the extended order of battle makes the line more susceptible of being thrown into confusion than formerly. When threatened with danger, men are naturally impelled to crowd together, and the more rapid the crowding the greater the confusion. When men stood so near each other as to almost feel each the other, they had more confidence and did not rush together, as will naturally take place now when threatened with sudden danger. Small bodies of cavalry can cause this sudden concentration, and then by rapidly withdrawing can give their own artillery and infantry a chance at these groups.

It is a question whether the advantage gained by rapidity of fire is not more than overcome by the decrease in the immediate effect of a hit by the smaller projectile. Experiments prove that it takes many hits by the small caliber projectile to disable an animal, while but one, or very few, of the old projectiles need hit to retire from

immediate use the individual struck. It is related that at Aldershot, where the new small-bore arm is used, a pig was struck seven times, receiving each hit with a dissatisfied grunt. The pig finally died, it is true, but not until its work, had it been a horse in a charge, would have been accomplished. The results of many carefully conducted experiments in musketry prove that the percentages of hits over unknown distances, generally accepted until very recently, are too great. In these experiments the men were perfectly cool and collected, firing at targets which were not firing back at them, and taking time to estimate the distances and adjust their sights. If, then, under these favorable circumstances, only small percentages could be obtained, what would be the results when the conditions were those of the battle-field?

The natural points for cavalry charges on infantry are the flanks, for they are its weakest points. There will be no battle-field so devoid of shelter or so level as to prevent bodies of cavalry, either small or large, from approaching under cover near to an enemy's flank and, once there, the opportunity for charging will present itself through some mishap to the enemy or chance of surprise; and the odds are greatly in favor of the success of the charge, if well timed, supported and pushed home.

While frontal charges on infantry cannot be advocated, as a rule, yet there are times when such charges will meet with success. They have succeeded in the past and, under favorable circumstances, should succeed again in the future. It is the business of the cavalry leader to watch for such chances and to take advantage of them quickly and decisively. The infantry, seemingly intact, may be so only in seeming. It may be of an inferior quality, or, through stress of battle, have become physically exhausted, or, through some tactical error, have become thrown into temporary confusion. Therefore, when circumstances seem to point to success, or when necessary to gain some tactical advantage, there should be no hesitation about making a frontal charge; only the effort can determine whether it will be crowned with success. In all cases, when a charge is to be made, ground scouts should be employed, in order to prevent a second Wœrth.

The Germans are acknowledged to be profound military students and to keep pace, in their investigations, with the various improvements in fire-arms and machines of war, particularly as to the effects such improvements may have upon future wars. Judging from their writings, they evidently believe that cavalry's future usefulness will equal that of its past.

Colonel v. LÖBER, of the General Staff, writes as follows: "Many writers have exaggerated the effect of the employment of small-bore rifles and smokeless powder upon the action of cavalry. All the experiences and improvements in fire-arms have done less harm to cavalry than the misapplication of its nature in training. A comparison of the Austrian, German and Russian cavalries points to the conclusion that all are unanimous regarding the point that cavalry attacks against unbroken infantry will still have good chances of success, if proper caution be displayed in making the attack."

Another one of their eminent writers says: "I have seen infantry which was quite played out. One squadron would then have been enough to have ridden down the remnants of an entire brigade; while a whole division could have practically decided the battle on that flank."

Still another distinguished officer is quoted as saying: "Personally, I have not seen many cavalry attacks; but those I have seen strengthen me in the belief that the action of cavalry on the battle-field can be crowned with success, if as the result of organization, training and good leaders, it feels that it can say: 'I will risk it. I can do it.'"

I will but briefly touch upon the action of cavalry against artillery on the battle-field. Many instances could be cited where batteries have been captured by saber charges, but I will simply quote from HAMLEY upon the subject, and cite one instance in support thereof. HAMLEY says:

"The practice of bringing great masses of artillery into position at an early stage of the attack must apparently cause large proportions of the line to be defended only, or chiefly, by artillery fire, during at least a portion of the action, because the guns will arrive before the main body of the infantry. The artillery of an army corps, if formed into one great battery, would occupy nearly a mile of front. There would be consequently a considerable part of this front inadequately, if not entirely, undefended by infantry fire, and in a great battle there would be many such spaces.

"On the opposite side the position, more deliberately occupied, would offer no such weak points, and if, as in many battle-fields, the ground between the hostile fronts be undulating without being intersected by farms, groves or hollow ways, there would seem to be no reason why masses of cavalry should not be assembled in anticipation, opposite the probable posts of the enemy's great batteries, and sufficiently near for a rapid attack upon them. Supposing the batteries directed on the opposing line, say fifteen hundred yards distant, the cavalry, already posted considerably in advance of their main line, might, in the heat and smoke and absorption of the engagement, pass over the intervening space almost unperceived; in any case, to lay the guns accurately on the advancing horse at successive points of their final career would seem impossible; and even the time for many discharges would be wanting.

"Important opportunities then, which recent tactics will offer to cavalry, will be the attack upon masses of artillery. Especially will this be practicable when the corps artillery pushes into action on the flank of the advance guard pending the arrival of the main body, or when infantry are defeated and retiring covered by artillery fire."

The instance cited in support of this is quoted *verbatim* from HOZIER'S "Seven Week's War;" it occurred at the battle of Tobitschau in 1866.

"BREDOW (the same who afterward made the celebrated charge at Vionville) under cover of some undulating ground, formed his regiment in echelon of squadrons for the attack of the guns.

"The first squadron he kept toward his right to cover the flank of his attack from any Austrian cavalry which might lie in that direction. The second and fourth squadrons he directed full against the front of the battery, and supported the second with the third as a reserve. The squadrons moved forward in perfect lines, slowly and steadily at first, seeming to glide over the field, gradually increasing the pace, regardless of the tremendous fire directed upon them, which emptied some saddles. When within a few hundred yards of the battery, they broke into a steady gallop, which increased in rapidity with every stride that brought the horses nearer to the Austrian line.

"All the time of their advance the gunners poured round after round into them, striving with desperate energy to sweep them away before they could gain the mouths of the cannon. Rapid flashes of flame breaking from the mouths of the guns accompanied the discharge of the shells, which were blurted forth with a nervous haste through the thick clouds of smoke that hung heavily before the muzzles. The flank squadrons, bending a little away from their comrades, made for either end of the line, in expectation of finding there some supporting cavalry. The two center ones went straight as an arrow against the guns themselves, and hurled themselves through the intervals between them upon the gunners. Then the firing ceased in a moment, and the smoke began to drift slowly away; but all noise was not hushed; shrieks from men cut down by the broad blades of the cuirassiers; cries for quarter; the rapid tramp of snorting and excited horses; the rattle of steel; shouts, cheers, and imprecations from the excited combatants, rose up to Heaven in a wild medley.

* * * * * * * *

"Eighteen guns, seven wagons, one hundred and sixty-eight horses, with one hundred and seventy prisoners, fell into the hands of the Prussian force—a noble prize to be won by a single regiment. It lost but twelve men and eight horses."

We have thus shown that the saber in spite of the improvements in fire-arms in the past, has held its own, and we believe the same will be true in the future. The question, however, is not so much one of a particular weapon, as whether the mounted action of cavalry will obtain on the battle-fields of the future as it has upon those of the past. Germany, by increasing her cavalry force, has for herself most emphatically answered it in the affirmative. How will this country answer it?

CONVERSATIONS ON CAVALRY; BY PRINCE KRAFT ZU HOHENLOHE-INGELFINGEN.

TRANSLATED FROM THE GERMAN.
BY FIRST LIEUTENANT CARL REICHMANN, NINTH INFANTRY.

THIRD CONVERSATION, (DECEMBER 6, 1885).—OF THE TRAINING OF THE OLDER SOLDIERS IN THE TIME OF FREDERICK THE GREAT.

H. In order not to prolong indefinitely my questions about the training of the cavalryman of the past century, I have brought with me those of the writings of General VON DER MARWITZ, which contain so many details of the service in those days.

S. I am perfectly willing to accept as a basis the service, as it was when that General entered it, *i. e.*, in the last decade of the eighteenth century; I must repeat, however, that even then the cavalry was no longer in the zenith of its efficiency. The cavalry of FREDERICK THE GREAT reached its greatest perfection at the time of the beginning of the Seven Years War, and again about ten years after the Peace of Hubertsburg.

H. It is natural that the efficiency of cavalry should suffer, used up as it was by seven years of war. In 1763 there were probably left but few well trained privates of 1756, and probably no horses at all which, in 1756, had been well broken; it is also probable that a systematic and thorough training of men and horses was impracticable during the seven years, in which no part of Prussia remained untouched by the war. But why should the efficiency of cavalry have decreased after 1774, since the Great King was still living?

S. It is a constantly recurring fact that, as time passes, the rust of peace attacks armies, unless it is kept off by men whose first consideration is the requirements of war and who, holding the latter in fresh remembrance, take care that the rust be removed. SEIDLITZ was dead; ZIETHEN was very old; the King could not supervise everything in person, and probably had no longer the strength to do so.

Briefly, from all we read and know of the time from 1774 to 1786, it appears that our cavalry, in all its regiments, was no longer what it used to be.

H. All old people in all walks of life, say: "When I was young it was different." As Colonel of Hussars in the campaigns against France from 1792 to 1795, BLUCHER accomplished remarkable successes.

S. Yes, BLUCHER did; and many an individual regimental commander did also. But of the use of masses of cavalry the history of the campaigns on the Rhine says nothing. One would think that in these campaigns the first levies of the French Republic, without proper organization and discipline, should have been swept off the field like chaff before the wind, by the use, in masses, of FREDERICK'S cavalry.

H. To return to MARWITZ; in his narrative of the time when he became a lieutenant, he says that he was constantly on his legs from 3:30 A. M. to 7 P. M., of which time he spent at least six hours on horseback, for the Estandarten Junkers (ensigns) were required to ride two horses, one in each squad. Hence there was riding by squad.

S. But he was still a recruit. The first instruction in riding had probably to be given by squads.

H. He joined for duty (January, 1790) shortly before the drill season, beginning in March. Then (on the same page) he writes: "Duty was light except during drill time. For there was daily but one small squad that rode or drilled dismounted. The Junker, while such, belonged to that squad for good."

S. There we already have a considerable difference between the service in MARWITZ'S time and in that of the Great King. During that last decade there was but one small squad that daily rode or drilled dismounted; thus this small squad did not even ride every day. But FREDERICK II. stated, as I have already mentioned, that the day was lost on which the rider did not exercise his horse; and he had them exercised even on Sundays. Furthermore, it does not follow at all that the squad in question rode in the school of the squad in the riding square or hall. If you look you will find that in the appendix to his essay on the decline of the Prussian cavalry, MARWITZ only speaks of the drill of the squadron and of individual riding. He even complains that, for three weeks in the fall, there were but forty men per company present for drill and that there was no individual riding at all.

H. Let us stop at this appendix to MARWITZ'S essay. According

to this there were one-half of the sixty-six gens d'armes of the company, *i. e.*, thirty-three on furlough. These furloughed men were called in from March 16th to May 23d, and were given individual riding for three weeks; after that there was company drill daily for three weeks; and, after the special review, only a sufficient number of the furloughed men were retained with the company to enable it to turn out with forty-eight gens d'armes. In the fall there was drill for three weeks with forty men, eight or ten furloughed men being called in. Thus he calculates that every furloughed man mounted his horse only twenty-seven times, the few who were detained in the service until the great review thirty-six times, and those again called in in the fall, forty-five times altogether. That, then, was all the cavalry work done by one-half of the men of this much renowned cavalry, which we are to take for our model! I think that one of our four year volunteers, who, during his last two years of service, mounts his horse five times per week, *i. e.*, 500 times in two years, can gain as much skill in riding as an old soldier of thirteen years' service of those days, who, after his first two recruit years, mounted his horse but forty-five times per year at the highest.

S. No exception can be taken to this calculation. I can only repeat that this was not the time when our cavalry had reached the climax of perfection. The system of furloughed men was the outcome of constantly increasing retrenchment and economy, beginning a long time after the three Silesian wars; and it became more and more extended because it was of pecuniary benefit to the chiefs who, under the law, were allowed to pocket the pay of the furloughed men. This system of furloughed men became gradually extended and, toward the end of the eighteenth century, it reached such dimensions as to greatly impair the efficiency of the cavalry, and the infantry too, as you read in HÖPFNER'S "History of the War of 1806."

H. Do you think there were no furloughed men in SEIDLITZ'S time?

S. There were some; but they were kept in practice and under control, as VARNHAGEN V. ENSE tells us.

H. The money for the furloughed men's pay went into the pockets of the captains?

S. In order to reimburse them for many expenses which were required of them, and of which we now have no idea; for up to the beginning of this century it was customary for the officers to be daily guests at their captain's tables.

H. Then there was also the system of "Freiwæchter," of which

MARWITZ complains. The law provided ten of them per company. They took part mounted only when the whole regiment turned out.

S. This system must also have impaired the efficiency of the cavalry, for MARWITZ says that they were poorer riders than the furloughed men, which does not surprise me.

H. Lastly, MARWITZ calculates that, of the remaining twenty-three men, the recruits for two years, *i. e.*, sixteen men, are to be deducted, leaving seven men with whom there was a possibility of their being good riders at the end of their terms of service.

S. Here I must check up MARWITZ's calculation. He figured seventy-five horses and sixty-six gens d'armes per company. For whom were the remaining nine horses?

H. For the first sergeant and non-commissioned officers, of course.

S. There we have nine more excellent riders. I will subtract one more from the above mentioned seven men, assuming that a man in his fourth year of service, even when riding daily, was not counted among the good riders. But the other six gens d'armes must have had much practice in riding. They were soldiers by trade, remained in the service until invalided, and assuming for the eight recruits to the sixty-six men an average term of service of sixteen years (counting in former losses); then, of the seven gens d'armes remaining constantly in the service, one must have been in the sixteenth, fourteenth, twelfth, tenth, eighth, sixth and fourth year of service each. The six oldest ones must have been good riders, for the poor riders were probably gotten rid of as "Freiwächter" or furloughed men. We may therefore say that at the end of the past century there were still probably fifteen good riders (exclusive of officers) in the troop, or thirty in the squadron.

H. But that is not of decisive importance.

S. It is; for you must consider that these fifteen or thirty riders respectively, who were then called good riders, were much farther advanced in the art of riding than the best riders we now have among the non-commissioned officers and privates of a squadron. Thus the squadron had thirty men who were excellent riders, and could be entrusted with the breaking of remounts. The steadiest, lightest and most intelligent ones could be selected for the youngest remounts, and there still remained enough picked riders to ride the older remounts, rebreak spoiled horses and break some horses to school riding.

H. Did that make better campaign riders of the great mass of horsemen?

S. Certainly; for the recruit mounted a horse better and more correctly broken to campaign riding than is often the case now. He thus received from the beginning a proper touch on horseback; he acquired a correct seat on a horse of correct paces. If a recruit receives his first instruction on a mistrained horse, the bad habits of the latter give him a faulty seat and hand, which are incorrigible and in consequence of which, when he is entrusted with breaking horses, he teaches them bad habits unconsciously and involuntarily. But when the recruit receives his riding lessons on a correctly going campaign horse, he will learn more riding in the first two years than another in four years who learns riding on a horse of faulty paces. But the principal point is, he will never spoil a horse; because he has, from the outset, that feeling one ought to have on a good horse.

H. This is obvious, for it is an old, well known cavalry rule that the recruit horse breaks the recruit just as much as the remount rider breaks the remount.

S. Now just think what a help it would be for a squadron to have thirty such fine riders.

H. You mean to say that the squadron does not now possess thirty good riders?

S. It may possess thirty or more riders, which now may be called good riders, but none of whom would then have been counted among those seven mentioned by MARWITZ. If, in addition, we consider that in the best times of cavalry, in 1756 and 1774, there were neither "Freiwæchter" nor furloughed men in such numbers, you must concede that a squadron possessed not thirty, but perhaps one hundred, well trained riders, of whom one-half, having special aptitude, might be called excellent riders.

H. When I consider this and assume that in the time of the Great King there were perhaps still fewer recruits, because the men remained in the service longer than in MARWITZ's time, then it follows of course that the squadron, leaving out sixteen remounts and perhaps two recruits, was always completely trained, winter and summer, and ready for the field at any time. But now the question comes: "What did the finished part of the squadron do throughout the year?" for the troops must have had an awfully dull time, when nothing was left to be done in the way of training.

S. SEIDLITZ never allowed time to hang heavily on the hands of his cavalry. A squadron, of say 100 horses, with its training complete, had plenty of exercises to practice the whole year round. Let us suppose there was a drill season of two months in the spring, and a practice season of two months in the summer and fall for drill

of larger bodies and maneuvers; there remained eight months which, in your opinion, were not utilized. But those eight months could be used to good purpose to practice things for which we have no time now, but which must be practiced thoroughly if cavalry is to serve its purpose fully.

H. What are those things?

S. Individual instruction, use of arms, marches before the enemy, riding under difficulties (obstacles, heavy ground, ice), rallying, passage of defiles and deployment upon emerging from the defiles, passage of fords, swimming. During all these exercises, that part of the troop not belonging to the remounts or recruits, drilled at least once a week in the school of the squadron in order to remain in a constant state of efficiency.

H. You have already informed me fully of the value placed upon individual riding by FREDERICK THE GREAT; but, as to the use of arms, I am inclined to believe that it was not in a higher state of perfection in those days than now.

S. Do you think there are now many regiments that possess sufficient proficiency in the use of the saber and lance?

H. I have observed but few regiments in detail; of the two regiments belonging to the division under my command, the one was as proficient in the use of the saber and the other in that of the lance, as could be expected.

S. Correct! as proficient as could be expected—considering how little time is devoted to it now. And, besides, these two regiments are perhaps shining exceptions. In many of the other regiments there are few of the older soldiers able to make a vigorous cut from the horse while in motion, or to touch with the lance a certain point. Under SEIDLITZ this was not sufficient; there the individual combat of man against man, of cavalryman against infantryman armed with the bayonet was practiced assiduously, and all the older soldiers possessed great skill in it.

H. Instead of this, much time is now devoted to instruction in the use of fire-arms; how well do our hussars now shoot with the carbine, while formerly there was a saying: "Whoever is hit by a cavalryman's pistol must believe in predestination."

S. This saying originated in the Wars of Liberation and those subsequent to them. SEIDLITZ laid great stress upon skill in pistol-firing, and had his men fire at the target from a gallop, and "even load at full speed and fire with deliberate aim" (VARNHAGEN VON ENSE). You may imagine how much time was required before the men acquired anything like proficiency.

H. The effect of cavalry fire is much more intense now than 100 years ago, because of the improvement in fire-arms. But leaving out the quality of fire-arms, the men were better shots then in comparison; they practiced more, especially the firing from horseback. But you were speaking of warlike marches. I should think they are sufficiently practiced during drill and maneuvers.

S. Not at all; for when the troops turn out for drill and maneuvers, they cannot make their marches as long as is desirable, because they must save their strength for drill and maneuver. In your letters on cavalry, you have pointed out yourself how important it is for a cavalry division to be able to make forced marches of fifty kilometers per day. You have pointed out that it requires practice to observe all those details which tend to save the strength of man and horse, when such great demands are made on them. Do you believe that, with six such forced marches of a whole division as proposed by you, you would accomplish anything but the ruin of a large number of horses, unless each squadron had had practice in making such long marches and sparing the horses as much as possible at the same time?

H. You are right there.

S. But the trooper must also learn how to march in different seasons of the year. With snow and ice on the ground, other things have to be observed than at the time of the fall maneuvers; and all this requires practice and experience, it cannot be learned from books, or looked up in a compendium at the moment of action.

H. Referring to what you further said of riding on difficult ground and rallying, I think we have plenty of time to practice it during drill.

S. Not at all; it must not be omitted during drill whenever there is an opportunity. But riding over all and any kind of ground should be practiced more than is possible under our present conditions of service. In those seasons of the year when we can march over the fields without doing damage, all riders are now confined to the ring. Under SEIDLITZ, they were dashing over snow covered fields; there the rider convinced himself of the possibility of passing over any kind of ground; there the horse learned how to act, if only the rider did not fret it with the rein, and kept a steady and firm seat. All ground of such character throws troops into disorder; but when each individual rider has learned to get over such ground the troop can learn how to rally quickly from the apparent disorder and be ready for a closed charge.

H. Did not many horses hurt themselves and become ruined

during these numerous exercises under SEIDLITZ on any kind of ground?

S. Much fewer than are now ruined by the awkwardness of horse and rider, when the troop for once gets into that kind of ground, unless previously taught how to act there, learning the easy things first. I remind you of what you told me yourself of the paper chases of infantry officers.

H. You mentioned the passage of defiles and the deployment upon debouching from the same. That, it seems, is merely a matter of drill. When the squadron has learned how to form front into line from column of threes, it knows how to deploy from a defile.

S. There, like many others, you are in error. From column of twos or threes the troop can only begin to form front into line in the manner prescribed in the drill regulations, when the rear of the column has left the defile and has room to march to the right or left oblique without disorder. But the troop must be able to begin the deployment from the defile as soon as the head of the column emerges from the same. If this is practiced on various and uneven ground, the troop can be formed for the charge quicker by the depth of the whole column. Such deployments from defiles are closely connected with quick rallying after passing over difficult ground, which loosens the order. For a mass of cavalry, formed in several lines and advancing on a broad front, meets with various ground. Here a squadron has to break into column to pass a bridge over an impassable ditch; there another has to give up the close formation on account of marshy ground or other difficult terrain, or it must pass in seeming disorder through wooded or bushy country; another comes upon a village and has to use the village street. Immediately beyond is the enemy; if the mass knows how to rally quickly, or to form line rapidly from the defile, it will be ready to charge without loss of time. If any time is required, however, the enemy has the advantage, awaiting as he does the cavalry just beyond the difficult ground. At the Striegauer Wasser, the Austro-Saxon cavalry stood ready at charging distance waiting for the Prussian cavalry, and thought it utterly impossible that the latter should be able to make a close charge immediately after passing that ground. But the Prussian cavalry had been practiced in such work; it quickly assumed a closed formation, surprised and defeated the enemy.

H. The first extra number of the *Militaer-Wochenblatt* of this year (1885), contains a similar incident from the battle of Chotusitz. The difficult terrain consists of several ditches with marshy and overgrown banks (loosening of the closed order), on the right flank

a creek with few passages (breaking into column and forming line), and on the left is the marshy Doubrawa. "The first line succeeds in passing the difficult ground, rallies quickly, breaks through both lines of the opposing Austrian cavalry, charges their reserves, throws the 3000 Croats and two infantry regiments of the second line into disorder."

S. But the second line?

H. The second line did not succeed in passing the same terrain; it had to pass through the village of Chotusitz and was met beyond by cuirassiers and hussars. It spite of its bravery the second line was defeated, "because the remaining seven squadrons had not been able to follow."

S. It would seem that this second line was not as well practiced in passing difficult ground and forming line after passing a defile as the regiments composing the first line.

H. That is possible, unless the soft ground was so much dug up by the first line that the second line stuck fast in it. Such things happen. The King, in a letter to Prince DESSAU, writes: "The action of part of our cavalry was very brave and heroic." He does not seem, however, to have been entirely satisfied with the "quick sounding of the assembly" and the "quick rallying." At least, he issued the regulations for the cavalry and the dragoons a month later while in camp at Kuttenberg; and he had a squadron of the regiment "gens d'armes" turn out repeatedly in the same camp and commanded it in person, to show "how squadrons were to drill in changes of direction at a gallop, how to disperse, and how to rally quickly upon the trumpet signal. All generals, field officers and squadron commanders were required to be present at these exercises."

S. The King reaped the fruits of these exercises three years later at Hohenfriedberg. To be able to do this, however, requires that all the men be practiced in it frequently. It also follows from the result of these regulations, which bore such fruit within three years, that it does not require a term of service of ten or twenty years to teach the men so long as they are practiced constantly and industriously. SEIDLITZ's movements at Rossbach and Zorndorf would also have been impossible if the cavalry had been thrown into disorder by every obstacle of the terrain.

H. There were fewer obstacles then than there are now. The increased cultivation of the ground has changed many a wide plain into cut-up ground.

S. That is one of the favorite sayings of modern times, by which, on the one hand, it is attempted to show that less or no cav-

alry at all is needed now; and which, on the other hand, is used as an excuse when the cavalry is no longer as efficient as it was 100 years ago. I admit that increased cultivation has rendered much of the terrain more difficult; but that should only be one more reason why the passage of such ground should be practiced. Nor were there entirely smooth plains 140 years ago everywhere that cavalry had to charge.

H. Under the orders of the Great King, cavalry had invariably to send forward some scouts, even officers, to examine and report upon the ground in front as to its practicability.

S. In general, yes; in special, it was frequently impossible. If you follow the routes taken by SEIDLITZ at Rossbach and Zorndorf, when and where he came into line and charged, you will agree with me that he could not have waited for reports to come in of every ditch, etc.; in that case he would surely have been too late. On the other hand, if he had not been sure that his cavalry could preserve or at least quickly regain the close formation and readiness to charge, in spite of all difficulties unexpectedly presented by the ground, he would not have ventured such movements with such large bodies, because he would have considered them foolhardy.

H. Was he not foolhardy and very lucky?

S. Not at all. He knew very well what he could risk, and when and where. He refused to obey the King's order at Zorndorf, when the latter ordered the charge too soon; and answered, when threatened with beheading, that "after the battle his head would be at the King's disposal, but that while the battle lasted he meant to use it himself in the King's interest."

H. Lastly, you mentioned the passage of fords as a special practice. I do not see why this should require special practice. A ford is a place in the river where the water is so shallow that it can be crossed by wagons or horses without swimming. There is no special art about it that has to be practiced. The only difficulty which might present itself would be a dislike to enter the water on the part of the horses; but there are many horses which like to go into the water, and do so fearlessly. Put them at the head to lead, and the others will follow, like one sheep another.

S. That is a wrong opinion, shared by the cavalry to a great extent. When the water is only a few inches deep and not rapid, it can be done that way, but then the ford is not worth mentioning. It is different when the water is so deep that it reaches to the horse's belly or higher, and when the river has some current. If a large body of cavalry rides through it in the dense marching column, it

forms a kind of dam from one bank to the other, above which the water will be checked, while below it flows off and its depth decreases. This causes a constantly increasing pressure of water, which pushes the horses down stream. Now, if every rider follows the man in front of him, this drifting down stream increases constantly; for if the first file drifts down one foot, the second file drifts two feet; the twentieth, twenty feet. The column soon forms a line concave toward the current, the water being checked most where the current is swiftest. Finally the pressure of water becomes so great that the horses are no longer able to resist it, and the higher the water rises the more it lifts the horses, so that their weight is insufficient to insure a good foothold. The column is suddenly torn asunder by the force of the water; the horses in the middle of the current are carried down stream, where the river is not fordable, and are in danger of being helplessly drowned.

H. Then the men must so ride through the ford that the road they follow in the water forms an arc convex to the direction of the current?

S. That is easier said than done; for, in the first place, it is a question whether the line followed by the ford and its width admit of making such a convex arc; and, in the second place, when the men cover in file, the current will soon make a straight line of the convex arc in the manner just indicated, and finally a concave arc, if the body of troops is large (division) and the crossing takes much time. It is necessary that this body of cavalry ride through the ford by platoons, leaving distances between the platoons to allow the water to flow off that it may not be checked. Each platoon should also have a guide knowing the ford. This can be accomplished if the leader of each platoon observes the direction in which the head of the platoon in front of him is led, that he may take the same direction and follow the rear of the column. But then, and especially if the current is strong, it becomes necessary that the platoon ride through the ford, not in the prescribed marching order, but in the "pulk,"* each horse's head being held above the rump of the next horse up stream. All the horses must also be held with their heads somewhat obliquely to the current, like the bow of a ferry boat. But it is absolutely necessary that no horse or rider be afraid of the water. They must be familiar with it, in order not to make fatal mistakes from fear of the water or from thoughtlessness. A horse unfamiliar with the water seeks with its front feet for some object on which to gain a foothold. Thus it happens that it tries to

*A Cossack formation.

place its front feet on the croup of the horse in front, pulling it down and making mischief. It is also to be observed, that every man riding for the first time through water, is inclined to look down into the water. Where there are eddies or whirlpools, it causes a turning sensation and consequent faulty guidance of the horse. The riders must practice looking steadily at the point on the farther bank, which they mean to reach. The rider must incline his body against the stream, so that if he becomes separated from his horse, he may get into the water above the horse, as otherwise he would be in danger. It is also very necessary that the rider preserve the regulation seat and thus give the horse the accustomed hold. He who is afraid of wet feet and pulls up his legs, loses all control over his horse at the moment of danger.

H. I see; the troops must previously be well and thoroughly instructed.

S. Instruction alone accomplishes nothing. Practice alone gives safety. Instruction must precede practice, which must progress from the easier to the more difficult. The horses must go into water willingly and confidently. This is necessary, in order that a ford may not prove an insurmountable obstacle to an individual patrol. To cross the ford with a large body however, it is necessary that all horses know how to swim under the rider, and that the riders have learned to act so that, when the depth of the water increases and the horses have to swim at the deepest places, they may not lose their heads.

H. Did the cavalry of SEIDLITZ practice fording frequently?

S. In his "Life of Seidlitz," VARNHAGEN VON ENSE tells us how fording was made the subject of frequent and special practice. They even drilled in the river Ohle, *i. e.*, forming line and breaking into column of threes. I believe, however, that the more frequent practice of fording was also due to the then circumstances. For in those days there were many more fords than now, when the communications are in so much better condition and bridges have been built everywhere. Fords were then crossed every day. The cavalry of those days could also swim, hence it must have had practice. The history of the Seven Year's War furnishes many examples of large bodies of cavalry crossing rivers by swimming.

H. I shall have to ask you many more questions about swimming, when we come to the training of the horse. For the present, I beg to state that I am not much impressed with the details of the service in the last century so far as the part taken by cavalry officers in

time of peace is concerned. I can only speak of what MARWITZ says. We have already mentioned how rarely the older soldiers mounted their horses. The recruits rode every day. But how many were there of them? Twelve per squadron, or sixteen at the highest. It is certain that an officer was not always present. What did the officers do in those days?

S. There is no question that cavalry officers of the last century had nothing whatever to do with the interior service. That was a matter between the captain, the first sergeant and the non-commissioned officers. The hard work of the lieutenant of the present cavalry, who in time of peace is busy from morning till night, was unknown then. In time of peace the officer was much more occupied with formalities and pleasure than now. Nor were his services necessary, for there were few recruits, many good riders and experienced non-commissioned officers. The officer's activity was limited to formalities, squadron drill mounted and dismounted, breaking his own horses, and bodily exercise. This was practicable in view of the long term of service and the uninterrupted state of complete training of the troops, which on this account reached such a high state of efficiency.

H. At a distance everything looks much rosier; and what is separated from us by centuries appears to us more perfect than the present, because we do not see its weak points nor get a close view of its worst features. Did you read what MARWITZ adds to the appendix of his essay on the decline of the Prussian cavalry?

S. You mean the amusing story told by v. AHLIMB of FREDERICK THE GREAT'S criticism of the "Yellows," the cuirassier regiment "Prince of Prussia"? Certainly. What do you infer from it?

H. That they also cooked with water in those days, and that the cavalry was not so perfect on all points, as FREDERICK'S cavalry appears to us now in the light of glory shed over it by history.

S. But how harshly the King criticizes a poorly trained regiment! "Slovenly, no accuracy, no order. The scoundrels sit their horses like tailors. You will have to do with me." Thus the King speaks to officers! He speaks to them of "lazy bones," "shame," "being cashiered," and says: "I shall have my thumb on you; these things must change or the devil will take you." It also appears from his speech, that the pay of the furloughed men went into the captain's pocket, which fact we mentioned above, for the King says: "The captains only think of making money," and then describes in detail how all the men are furloughed. Do you believe

that the King would have criticized the regiment so harshly, unless other regiments had come up to his requirements? It also appears from the same speech how much he demanded from his cavalry officers. "Your service is such," he says, "that I must demand more of a lieutenant of cavalry than from a major of infantry." Nothing shows better than this severe lecture what a high standard the whole of the King's cavalry must have reached.

H. The horses, too, and their training?

S. Of that, another time.

THE "TROT" AS A CAVALRY GAIT.

By Captain S. L. Woodward, Tenth Cavalry.

THE trot is prescribed in the last drill regulations as an habitual gait, and virtually as *the* habitual gait; and it is now used to the almost entire exclusion of every other. We trot from the stables to the drill ground, and trot through the drill.

Comparatively few horses are natural trotters, and fewer are easy trotters under the saddle. Often a colt in the pasture will be seen to strike a trot and keep it for a few moments and it would be declared by its owner, or other enthusiast, to be a "natural trotter"; but almost invariably it will kick up its heels and go off in its natural gait—a gallop. Perhaps in the fine breeding of trotting horses, there may be colts bred as natural trotters; but they are raised for driving purposes, and nobody ever thought of training a horse to make great time as a trotter under the saddle. All fast riding horses are runners; and the run is a kind of gallop. However, this paper is not intended to be a dissertation on "thoroughbred horses."

It has always been conceded that the most valuable gait for a saddle horse, for comfortable riding and for long and hard marching, is a walk. It is also a well known fact that a horse which trots naturally, or has been trained from infancy to trot, is rarely, if ever, a good walker. The present scheme seems to be to teach every horse to trot; and as this is the "habitual gait" prescribed, either the rider is at fault or the horse must be condemned as unfit for cavalry service. When a horse is trained to habitually trot, his walk and gallop are very much impaired. No one with a fine carriage roadster will permit him to be used under the saddle; and no one with a fine saddle horse will permit him to be put in harness. I am aware that good horses are often used both ways, and are intelligent enough to adapt themselves to the altered circumstances. It does not change the

rule that a fine harness horse is only a trotter, and a fine saddle horse a walker or galloper. Imagine taking a fine trotting horse out of harness, equipping him with a saddle, curb bridle, and 150 or 200 pounds of "avoirdupois," and putting him at hurdles and ditches. Nobody ever saw an Indian or frontiersman ride at a trot, and they are the model riders of this country.

The United States never saw, and in our time will not see, more efficient cavalry than that which was in service during the last two years of the late Rebellion. I was identified, from February 1, 1862, to September 19, 1865, with that portion of it which served in the States bordering on the Mississippi River and its tributaries, and I speak more particularly of that portion. It was my good fortune during the period I have named, to act as a staff officer of cavalry for commands ranging in strength from a brigade of 1700, to a corps of 32,000. The men composing these commands were generally from the Western States, and raised, virtually, on horseback. The horses, like the men, were trained for the saddle. The "trot" as a gait cut no figure; it was seldom that a trotting horse was seen, until late in the war, when two or three regiments came from the East, composed generally of very amateur horsemen, and commanded to a large extent by imported officers; these attempted to make their regiments trot. I shall never cease to be amused at the reply of one of these troopers to his colonel, who ordered him in language more forcible than elegant to "trot"; he said: "My God, Colonel, I cannot trot; my horse is a pacer." These regiments presented a novel appearance to the natural-born horsemen from the Western and Southern States, and they were by these derisively called "saddle spankers." I felt thankful that I was not considered a "saddle spanker"; but alas! we have all come to it now.

The trot is an unnatural gait for most horses, especially under the saddle with from 150 to 250 pounds on his back. It destroys his efficiency for walking or cantering, and the motion, a pounding one, is hard alike on men and horses. A canter, or lope as it is called in the West and South, is more natural, horses are more easily trained in it, it is more exhilarating and less fatiguing to the rider, and simply requires a little acceleration to make it a "gallop" or "charge."

In this connection I desire to say that more attention should be paid to the walk; however, I do not wish to be understood as advocating drilling at a walk. I believe that maneuvers on drill should be at rapid gaits, the canter or gallop. But for marches and campaigns the walk is the only gait, if the commanding officer expects to "get

there" in good shape. I am aware that it has been advanced by some officers that cavalry on a march should alternately walk, trot and gallop; I believe if the campaign were an extended one, remounts would have to be close on our heels or we would walk and lead our horses, or leave the animals and abandon the equipments. In 1863 a command to which I belonged marched 800 miles in sixteen days, and the command proper never moved out of a walk except on one occasion, when it went at a lope to the relief of a battalion which had preceded the main body by several hours, and was suspected to be in trouble. Of course detachments made rapid dashes into towns and in pursuit of a visible enemy, but never at a trot.

There are not, in the troop which I command, a dozen horses which would be considered easy trotting horses by any officer in this post. Officers, if they have to ride at a trot, will select their mounts with that view; the soldiers ride what is assigned to them. I believe cerebral disease has been caused by men being compelled to ride hard trotting horses. This idea has not only arisen in my own mind, but has been advanced by others. It is not original with me.

I believe that carefully trained horses can be brought to walk four and one-half miles per hour. I am aware that four miles is the normal gait; but I have owned several which made five miles on a measured road, about feeding time, when their noses were pointed toward the stable. The canter covers about six miles per hour; a slow trot is supposed to be about that, but I have been compelled to ride at a trot in a column, where the gait was not more than five miles per hour. It was pronounced so by others who were participants and onlookers. A well trained walking horse could have done nearly as well with more ease to himself and the rider. For the gratification of the populace who are spectators on parades, etc., I believe that the canter or gallop would be more satisfactory than the trot.

An officer who marches his command ten miles at a trot and goes immediately into action, will be half whipped when he gets there. I consider it as bad as marching infantry five miles at double time and going into action. The worst whipped command I ever saw had been served that way by an inconsiderate and inefficient commander. Much of the drill might be by marching the troops eight or ten miles at a time over the ordinary roads, the slow-walking horses being coupled with the faster ones. Many of the former could thus soon be trained to be good walkers, and the men would acquire a graceful, easy seat, which they cannot by eternally pounding around at a trot on the drill ground.

These are simply a crude compilation of ideas on the subject which have forced themselves upon me since I came to this Post, where the "trot" is the prevailing gait. I have been guided by my experiences of nearly thirty years' service in the cavalry, and while I am open to conviction and in favor of progress, I would prefer to put myself on record as of the opinion that a trotting horse, as such, is not an efficient cavalry horse.

DISCUSSION.

Captain S. M. SWIGERT, Second Cavalry.

I do not agree with the essay just read, for I think the trot is preëminently the cavalry gait when properly used, but like everything else it can be abused, and horses are broken down by it as well as any other gait. The trot is one of the natural gaits of a horse, yet, for a proper use of it, cavalry horses should be carefully trained to it, as uniformity and steadiness of motion is what is most required.

Some fast time has been made by trotters under the saddle: Great Eastern, one mile, 2:15¾; Tacony, two miles, 5:02; Dutchman, three miles, 7:32½; Dutchman, four miles, 10:51; Whalebone, six miles, 18:52; Steel Grey, ten miles, 27:56½; Chancellor, thirty-two miles, 1 hour 58 min.; Rattler, thirty-four miles, (154 lbs.,) 2 hours 18:56; Black Jake, fifty miles, (175 lbs.,) 3 hours 57 min.; Halliday, one hundred and ten miles, (196 lbs.,) in less than eighteen hours.

For the last three years I have used the trot with my troop almost constantly, and I think both men and horses are better for it; have not had one sore back; the speed at all gaits is much more uniform. The trot should only be used upon suitable roads and under proper conditions, and I think it is a welcome change from the walk during a march to both men and horses; and, during a forced march, it seems a necessity. It is now used by the armies of Europe, and is prescribed in the drill regulations. One of our best cavalry officers, General MERRITT, recommends the trot, for ten or more minutes, twice, or oftener, during each hour of the march, and says: "Even the gallop for from seven to ten minutes will not be injurious in a well conducted command."

The following is given as the method of a march of thirty-two miles in the German army for a division of cavalry:

About 2 miles at a walk, half an hour.
" 2.33 " " trot, quarter of an hour.
" 2 " " walk, half an hour.
" 4.5 " " trot, half an hour.
" 2 " " walk, half an hour.
" 2.33 " " trot, quarter of an hour.
" 2 " " walk, half an hour.

17 miles in three and-a-half hours, with half an hour for short halts.

Ground halt for two or three hours.

About 2 miles at a walk, half an hour.
" 2.33 " " trot, quarter of an hour.
" 2 " " walk, half an hour.
" 2.33 " " trot, quarter of an hour.
" 2 " " walk, half an hour.
" 2.33 " " trot, quarter of an hour.
" 2 " " walk, half an hour.

15 miles in three and-a-quarter hours, with half an hour for short halts.

Captain W. D. BEACH, Third Cavalry.

Probably no officer present has had the field service with cavalry that Major WOODWARD has had and, for that reason, his opinions are entitled to very great weight. The trot, judging from our new drill regulations, seems to be the coming gait and, for one, I am heartily in favor of it. Used sparingly, in connection with the walk, I believe a command can be made to cover more ground with less fatigue and injury to the horses than by the walk alone.

The old and only gait for marches, the walk, as many of us know from experience, varied from two and three-quarters to four miles an hour, depending upon how rapidly the commanding officer's horse moved. Cooks were called at 3 A. M., and the command left camp "as soon thereafter as practicable," plodding along all day, barring the customary halts, and reaching camp toward sunset after a march of perhaps twenty-five miles.

For over two months last winter while on the lower Rio Grande, in command of a troop in the field, I habitually used the walk alternating with the trot, with excellent results. One day we covered forty-six measured miles, and the next thirty-six; while on several occasions the march was over thirty-five. Good stretches of level road only were used for the trot, which was at the rate of seven miles an hour; but, except in case of necessity, it was never used in

the first hour of the march. Including the usual halts, it was found that the entire march was at the rate of five miles an hour, which I should think could be accomplished almost as well by a much larger command.

I do not think that any large proportion of the cavalry horses in our service can be made to walk five miles an hour under any circumstances. Objections to the gallop that appeal very forcibly are that horses require much greater distances in column, usually fret and pull on the reins, while many hard-mouthed animals will take the charging gait if allowed to do so. This last tendency could doubtless be eradicated, and I will say that the squadron at this post, which is the best gaited I have ever seen, moves very smoothly at the gallop.

Captain C. W. TAYLOR, Ninth Cavalry.

I cannot agree with Major WOODWARD that the trot is not a cavalry gait; neither do I agree with others who may claim that it is the only gait for cavalry on the march. I am a believer in the three gaits: the walk, the trot and the gallop, and as a result of considerable experience in marching in different climates, I am convinced that the march is rendered much easier to man and horse by a judicious combination of the three.

I believe the trot is the natural gait for the majority of horses. Turn a horse loose, and up to a certain degree of speed he is more apt to trot than he is to walk or gallop. This gait is more easily taught than any other. It is a difficult matter to train a horse to walk four miles an hour when he has been born with a walk of three; while on the contrary, it is not very hard to train him to trot eight miles and gallop twelve per hour. My observation teaches me that it is a rare sight to see an Indian or cow pony moving at a walk, their ordinary gait being the trot and, when that is too slow, then the gallop.

For purposes of drill and instruction of troopers, the trot is the best gait, for the reason that a man taught to ride well at that gait will, without additional instruction, ride well at any other. Horses should be trained to take any of the three at command. I know of horses that, when moving at rapid gaits, will of their own volition (undoubtedly to rest themselves), change from a gallop to a trot, and *vice versa*.

At faster gaits than a walk men cannot lounge nor sleep in their saddles, and I observe as a result that sore backs are greatly diminished in number. Another point in favor of quick marches, and as a prevention against sore backs, is that the long-continued sweating of the back under saddle and occupant is relieved by getting early into camp and allowing the fresh air to come in contact therewith.

I believe that had Major WOODWARD been able to carefully observe the entire column on its remarkable march, to which he refers, that he would have noticed many horses trotting when the command was supposed to be at a gallop, and very many of them doing the same thing when they were presumed to walk.

Possibly the horse himself is the only absolute authority to which to appeal for a settlement of this question, but I am inclined to think that his answer, could he speak, would be much of the same tenor as that named in the fable of the Arab horse which, when asked by its rider whether it preferred to gallop up or down hill, replied, "Damn them both." I believe that the walk for a perpetual gait on the march is both a horse and man killer; they will both die of *ennui* if of nothing else.

First Lieutenant E. P. ANDRUS, Fifth Cavalry.

It has been my good fortune to have done most of my marching under General MERRITT, or others who learned the art of marching cavalry from that great master of it—PHILIP ST. GEORGE COOKE.

The longest march I ever made under General MERRITT was from the junction of the two branches of Stinking Water in Wyoming to Cheyenne, a distance of about 430 miles. With the exception of the last ninety miles, the command consisted of twelve troops of cavalry with their wagons. When the country permitted it, we marched each day at a walk, trot, and dismounted, the walk of course predominating. Our stock was always in good condition, and neither horses nor men appeared tired upon reaching camp.

I have marched under other commanding officers, who believed cavalry would be ruined by moving out of a slow walk; the result being that everybody, horses and men, were tired upon reaching camp; and, during the march it seemed that we never would get there. When horses trot the men cannot lounge in their saddles; and, by alternating the walk and trot, fewer sore backs are made than by the walk alone; while camp being made so much sooner, the horses have an opportunity of grazing.

Lieutenant GEORGE H. SANDS, Sixth Cavalry.

My experience has been very much the same as that of Captain BEACH and others, who have already commented on this subject. The active campaigns in the Southwest with notable cavalry officers, the ordinary scouting and hunting expeditions and the work on the drill ground, have led me to believe thoroughly in the "trot" as the gait for rapid marches and for drill maneuvers. Where the camping places are known in advance, the day's march should be made in time to allow of grazing, feeding and grooming, and rest for the horse as well as for the rider.

Experience has taught me that, with practice, the cavalryman will soon learn to place his saddle and adjust his seat at a point on the horse's back where the minimum amount of jarring is communicated to the rider. This once attained, the so-called rough trotter has no further terrors for him. I believe that the packs can be made tight and compact enough to avoid the multiplied jarring of the smaller articles, by the training and discipline of the drill ground, and no opportunity should be passed over which would lead to the desired state of excellence in "saddle packing."

Having been thrown with mounted Indians on several occasions, I fail to recall any instance wherein the "gallop" was the favorite gait for long distances. I am convinced that the gait predominating was a fox, or shambling trot. For marching, I advocate the trot, used in connection with the walk, so as to make the rate of traveling from six to eight miles an hour; for the drill ground, the trot, after the preliminary instructions. The gallop, with the cavalry burden, will rapidly wear out any animal.

Lieutenant W. S. SCOTT, First Cavalry.

It seems rather remarkable that we should be tonight discussing the gaits of an animal which has, for more than 3500 years, been domesticated and so universally used and intimately associated with man. It would seem that experience, as well as experiment, would have taught us long ago which were his best gaits for endurance, particularly for military purposes.

About the most authentic history of the horse of the earlier periods is to be found in the Bible, the first books of which are replete with information concerning him, so much so, that we can fix within a few years the date when he became domesticated, which seems to have been in Egypt, about 1740 B. C. Shortly after this time, he

became extensively used in warfare; nor has there been a period since when he has not figured more or less conspicuously in war.

First, he was used to draw chariots; and it is recorded that SESOSTRIS went to battle with 27,000 chariots drawn by horses. As time went on, man learned that the horse could bear a burden, and he thus became a cavalry horse. We are taught to regard the ancient war horse generally as an animal, however, that continually cavorted around on his hind feet, so there is little to be learned from the illustrations of the noble beast of that period as regards his capacity to trot.

Speaking of his being able to bear a burden reminds me that the analysis of the gaits should be taken into consideration. It would seem that the walk would be the gait most to his taste when he has a load on his back; since he never has all his feet off the ground at once, he would raise very many fewer foot-pounds in a day's march than in the trot or gallop, where every leap clears him of the ground and makes him actually lift his load a certain height. Since the trot is a gait of two diagonal beats, I believe there is less displacement of the center of gravity from the center of motion than at any other gait; and it is to make the two coincide that we aim to accomplish in placing the burden on the back.

But for the lifting of the load above spoken of, I should say the trot is the natural gait, and I do believe it is in harness. Nature seldom makes a mess of matters, and when we consider the swiftness, the grace and endurance of this gait, it would seem that nature had designed it. I consider the gallop too fatiguing on the march, except for short distances at long intervals. I believe it much better to walk and trot alternately during the day's march, arrive in camp early, remove the weight from the horse's back and allow him to graze, than to keep him plodding all day under a dead weight. Where time has been a principle factor, the trot and walk alternating has certainly proven very satisfactory, notably in cases of one cavalry command going to the relief of another, such as the relief of THORNBURG's command in 1879; the marches of the Ninth Cavalry in Dakota in 1890–91, as described by Lieutenant PERRY in the CAVALRY JOURNAL.

My own experience with small detachments on the frontier in pursuit of deserters has proven to my own satisfaction that the combined gaits are most satisfactory. The subalterns of the command to which I belonged had quite an extensive experience in the winter of 1890–91 on patrol duty in Dakota; they were all convinced that the combined gaits were most satisfactory.

Authorities differ as to the endurance of the horse under different gaits. Major DWYER says that a horse can be trained to travel with less fatigue at the trot than at any other gait. Captain DORST in the *Military Service Journal* says, that "We know that under the conditions of active field service horses will last longer marching at a steady walk, day after day, than when walking and trotting alternately."

All in all, I do not agree with Major WOODWARD, though he writes from extensive experience — a teacher far more to be respected than information obtained from books.

Lieutenant O. B. MEYER, Second Cavalry.

Judging from my limited experience, I should class the trot next to the walk in importance as a cavalry gait. I believe that its importance is steadily increasing with the changes in the use of cavalry in modern warfare. Cavalry is liable to be called into the field at any season of the year. The trot, I believe, is the only gait that will keep up the circulation in both man and horse while riding in very cold weather. In the winter of 1890, while serving in the field in Dakota, I found that by alternating the walk and trot I was best able to keep from being benumbed by the cold, dismounting and leading at times to prevent the feet from freezing. In using the word "trot" I mean the uniform gait of the trained horse, and not the haphazard gait taken up by an untrained horse. I see no reason why the cavalry horses, at those of our large posts where there are riding halls, trained in the hall during the winter months, cannot be taken onto the drill ground as soon as the ground hardens in the spring, there placed in charge of an officer who understands his business and be made to move at all gaits as uniformly as trained infantry, particular attention being paid to the walk and trot.

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I believe that for riding over long distances the extremes between the walk and gallop are too great; they have a tendency to nag a horse. Of course, if we are going to mount our troopers on Indian ponies or the cow-horses of the plains, then the walk and gallop are the proper gaits, but I think that under these circumstances we had better change the name of our mounted men and call them scouts.

Captain S. L. WOODWARD, Tenth Cavalry.

I have heard with interest the criticisms upon my essay, and am gratified that there is so little adverse to the especial point I have made. While great favor is given the trot, all appear to consider the walk as a campaign gait essentially necessary; and I beg that critics will not lose sight of the fact that I advocate more attention to the training of horses for this most important gait.

If men are so much in need of sleep that it is necessary to pound them over the road at a trot, it would be better to camp and take needful rest. I am aware of the fact that a slow walking horse is about the most tiresome brute in the world to ride, unless it is a hard trotter; but a good, springy, four-mile-an-hour walk is doubtless the easiest for long marches. A horse that cannot be trained to make nearly or quite four miles per hour is unsuitable for cavalry service. Proper supervision of a column by officers and non-commissioned officers will serve to prevent dozing or lounging in the saddle. A good rider can doze in his saddle without detriment to the horse. However, I do not advocate permitting this.

I believe the horses of SESOSTRIS' war chariots have always been represented as marching at a gallop. I do not believe, however, that they moved off a walk when changing station and marching over peaceable roads. The remarks of Lieutenant SCOTT as to the proper gait for a horse under pack (which is the normal condition of the American cavalry horse on the march) I entirely agree with.

The Tenth Cavalry as a regiment — thirty-eight officers and about 700 men — marched, in 1885, from Texas to Arizona. The dust was fearful, so that, although good intervals were maintained by squadrons and troops, men and horses were almost blinded and suffocated. I venture the assertion, that there was not an officer in that column who would not have considered it a most outlandish performance to have moved that command at a faster gait than a walk. Certainly Colonel WADE, who commanded the regiment from Fort Davis, Texas, to Bowie Station, Arizona, and Lieutenant-Colonel MCLELLAN, who commanded one squadron from there to Fort Verde, Arizona, did not consider it proper to do so; and these two officers have probably had as much cavalry experience as any now in active service.

I have marched thousands of miles, over good roads and bad, through dust and mud, over barren, desolate plains and mountain trails, under Generals GRIERSON and DAVIDSON, Colonels WADE, CARPENTER, MCLELLAN, and other well-known officers of from thirty to forty-five years' experience in active cavalry service, and I have yet to see troops moved, except in a great emergency, at a faster gait

than a walk. Dust or mud and rough roads or trails, will generally be the condition in this country in the movements of large or small bodies of cavalry; and the more attention officers give to the training of their horses to this gait the more efficient they will be.

One of the criticisms states that the "cooks were awakened at 3 A. M., and the command plodded along all day, reaching camp toward sunset, after a march of perhaps twenty-five miles." This was a case of gross mismanagement. I have been the victim of such myself; but it is no argument in favor of a trot. I have habitually left camp comfortably at 7 o'clock after grazing the animals from one to two hours, and made twenty-five miles before 2 o'clock. I do not think the troop of horses which I now command could do it as they have been trained principally in the trot, and scarcely know how to walk.

I believe it will be conceded that the squadron at this post, when moving at a canter or gallop, does so nearly as uniformly as at a trot, although they have not had one-fourth the practice at the former gait that they have had at the latter. Most animals can, in my opinion, be trained to do so much easier than to trot.

The following is clipped from a newspaper:

"Fogg says that there is only one objection, so far as he is concerned, to riding a trotting horse. The horse's back is always coming up when the rider is going down, and going down when the rider is coming up."

THE ACTION AND MINOR TACTICAL USE OF CAVALRY IN THE LIGHT OF THE WAR OF 1870–71.

BY SECOND LIEUTENANT R. G. PAXTON, TENTH CAVALRY.

CAVALRY action may be divided into three general classses, viz: (1) Shock action—delivered by a mounted line or echelon of lines; (2) Detached action—comprising all extended order formation and independent action; (3) Dismounted fire action.

Thus the cavalry leader has three different methods of accomplishing his object, of delivering his blow; while each has its own particular field or combination of circumstances wherein it is supreme.

The development of dismounted fire action is comparatively recent; there was but slight preparation for it in the German and French cavalry of 1870, and it was contrary to their universally accepted ideas of cavalry action. Nevertheless, we are told that all German officers who had experience in screening and reconnoitering duty—that province of cavalry which they grasped so completely and executed so thoroughly—have declared in favor of arming the trooper with a long-range carbine, and teaching him to use it on foot. And had the French displayed a corresponding curiosity concerning their enemies' movements, and confided their investigations to a cavalry armed and instructed as was our own in 1864, we can but believe that the German operations in screening and reconnoitering might have been attended by very different results.

Cavalry, capable of executing an effective dismounted fire, can be scattered broadcast, as it were, to a distance of many miles to the front and flanks of an army, without running the humiliating risk of being stopped by a handful of well posted infantry.

It is indeed to our own war that we must turn for all positive lessons in dismounted fire action; but that mode of action is so peculiarly suited to American ideas, so easily grasped by the Ameri-

can soldier, that we can well afford to turn to a foreign war for lessons in an employment of cavalry, in which we have much to learn.

At the same time, I do not wish to underrate the lessons taught us by our own war in every mode of cavalry action; for I do not believe that the history of the world can offer a better illustration of the triple use of cavalry than that presented by the battle of Gettysburg—BUFORD reconnoitering to the front and keeping touch with the enemy; then seizing the critical position, and holding it by dismounted fire action until the advance of the army; and, lastly, GREGG's mounted action on the right of the line of battle.

But we must never for a moment forget that dismounted action is exceptional, to be adopted only at considerable sacrifice of effective force, and only under peculiar conditions which render such a sacrifice desirable. Consequently it is not in the results to be produced by dismounted fire action that we are to find the *raison d'être* of cavalry.

But what results are we to expect from shock action? Take first a peace experiment. In a report of the German field maneuvers of 1879, we find as follows: "A regiment of lancers (400 strong), took advantage of cover afforded by the ground to charge in flank four battalions of infantry (4000). The surprise was so complete that the cavalry arrived within 200 yards of the enemy's flank in full charge before it was perceived, and was upon the infantry before any effective fire could be delivered." As a result of this charge Count VON MOLTKE decided that three battalions were placed *hors de combat*.

Thus it was decided by a most eminent strategist—one who had conducted two great wars to a most successful termination—that 400 mounted men had practically destroyed a body of 3000 infantry, whereas, if they had attempted to use dismounted action they could not have been expected to overthrow more than a company of 250 men.

As to the circumstances under which the cavalry charge should not be delivered, we have numerous examples on both sides, the most notable being the charges of MICHEL's brigade at Wörth, and of BONNEMAIN's division later on in the same battle. These charges were both frontal, against unshaken infantry and artillery, over a clear field of fire, both frontal and flank, some 1500 yards in extent; over ground that consisted of hop fields and vineyards, intersected by ditches, and sodden from recent heavy rains. Its mounted reserve was retained in either case. Even under such fatally adverse circumstances (and who can imagine worse?) the heavy loss incurred was

not without compensation. The three hours' time gained by the first were no mean consideration, for at the close of the battle the few remaining hours of daylight were very precious to the victors.

The charge of the French Imperial Guard at Vionville was almost without result, but was delivered from a distance of 2500 paces, against unshaken infantry supported by artillery, not surprised, and protected in front by obstacles that seem to have been unforeseen by the charging cavalry. The charges of the French cavalry on the field of Floing at Sedan, tell the same story.

We come now to the most brilliant performance of cavalry on the battle-field during that war—the well known charge of BREDOW's brigade. This too was a sacrifice charge to gain time for the arrival of reinforcements; but the conditions were more favorable, the ground was flat and suitable for cavalry.

The German Third Army Corps had been engaged for four hours against three-fold numbers closing BAZAINE's line of retreat upon Verdun. About 1 o'clock it was seriously threatened by an advance of the French Sixth Corps. BREDOW's brigade of six squadrons was ordered to break the front of this corps and, advancing in column, he deployed practically into one line echeloned slightly forward on the left. Charging forward he broke through the front line, the line of supports and the batteries, and sweeping on, was attacking the masses of troops and mitrailleuse batteries in rear, when, with his horses blown and his formation broken by the charge, he was attacked on both flanks by greatly superior numbers of French cavalry. The recall was sounded and the squadrons forced their way back through the lines that they had ridden over in their advance.

Of course the loss was very heavy, but the advance of the French Sixth Corps was completely paralyzed, and ample time was given for the approach of the German reinforcements.

During the advance over 1500 yards, until the first line of infantry was penetrated, it is estimated on the evidence of eye-witnesses, that not more than fifty horses fell—a trifling loss when compared with the end accomplished. The number of infantry whose fire action was brought to bear on the cavalry during the charge was not less than 8000, yet this body together with its supporting artillery was reduced to a state of complete inaction for the remainder of the day.

Now, such brilliant results having been achieved in the first part of the charge, let us consider how the subsequent disasters might have been avoided. Suppose a second line, similar to the first, had

followed some 500 yards in rear, completing the demoralization of the batteries and lines of infantry, penetrated by the first line but still able to do very material execution, as the remnants of BREDOW's squadrons found to their cost when they fought their way back over ground that had just been swept by their gallant charge. Then let reserves follow on either flank, held well in hand and the strength of their horses carefully preserved, to reap the fruits of a victory or to cover the withdrawal of the first lines. BREDOW might have retired in a very different manner had he had a reserve wherewith to oppose the charge of FORTON's fresh squadrons.

The Prussians were quick enough to grasp the fact that infantry must advance in a succession of lines; might they not have applied the same principles to cavalry with even greater advantage? And might not the first line have been extended in deference to the increased power of the breech-loader, reserving the wall-like shock for the second or some succeeding line that could be brought up comparatively intact?

These principles have, I believe, been adopted to some extent in drill regulations, but as they were not applied on either side during the War of 1870, we must make due allowance in making our deductions. We shall not hereafter expect the charge of great masses of cavalry to decide the battle, as at Eckmuhl, Borodino and Waterloo. We shall not expect 5000 horsemen, led by a SEIDLITZ, and aided only by a few rounds from some field-guns, to break and rout an entire army over 50,000 strong, as at Rossbach; but we shall still expect brilliant results to be obtained on the battle-field by the timely charge of a brigade, a regiment, or even a squadron.

We have now to consider the independent action of cavalry, comprising generally the screening, reconnoitering and outpost duties of that arm. If we form our conclusions from the results obtained in the War of 1870, we must admit that this is by far the most important duty that cavalry will have to perform. We find that the German armies, throughout their advance, were covered by a screen of cavalry distributed in bodies radiating from the front and flanks, and diminishing in size as the distance from the main column increased; thus the outer bodies were small patrols, often of not more than three or four men each, whose duties were to come into contact with the enemy, ascertain his position and numbers, hang on to him and continue to observe his every movement, make careful reconnaissance of the ground, and keep the army informed of the result

of all of these observations by frequent reports sent through the bodies in their rear.

For these outer patrols, alert, intelligent and well-instructed men were selected, and they very rarely failed in their object. If they met with opposition, they fell back upon supporting bodies in rear until sufficient strength was acquired to drive the enemy in; if unopposed, they pushed out several marches to the front, and if suddenly attacked, one or more of them almost invariably succeeded in getting back to make report.

Where the object of this duty was mainly reconnaissance as distinguished from screening, and necessitated operations at a great distance from supporting forces, the Germans evinced their appreciation of its importance by the frequent use that they made of officers' patrols. Considerable independence was allowed these officers; they knew what was wanted, and according to the Prussian spirit of centralized decentralization, they were informed of the end to be accomplished and left to work out the detailed method for themselves. Numerous instances might be cited of valuable service rendered by these officers' patrols; cases in which individual officers rode over eighty miles in a single day to bring in important information. The great value of such information to the German armies, and the manifold difficulties attending its acquisition, lead us to believe that Captain MAUDE knew whereof he spoke when he said: "There is no more royal road to distinction than the ability to write a concise and accurate report."

Nor was the German cavalry content with merely keeping up the contact with the front or rear of an enemy. When MCMAHON retreated from Wörth, his pursuer's cavalry enveloped his flanks and moved abreast of the heads of his columns. MCMAHON's cavalry attempted no detached operations. Thus we see the explanation of what would at first seem inexplicable to the military student.

How was it that such a body of regular troops, under a practiced commander, after a defeat that was by no means overwhelming, should have been "unable to pause or exert any influence for good in the theater of war until an incessant retreat for nine days had carried them 200 miles from the scene of their defeat?" MCMAHON moved as one blind, his troops kept in a continual state of demoralization by the constant appearance of the enemy on his front, flanks and rear, while his pursuers advanced with that assurance and precision which can be acquired only from an exact knowledge of the enemy's movements and dispositions. MCMAHON's communication with the other French forces in the theater was completely severed;

and he lost the opportunity of forming, with perfect ease, that junction with BAZAINE, which he attempted later in his flank march on Sedan, with such small prospect of success and such disastrous results.

Another incident of this pursuit gives an idea of the far reaching effects of such cavalry operations. Two regiments on MCMAHON's flank entered Nancy; near this point they destroyed a railway junction and thereby prevented the French Sixth Corps from receiving its reserve artillery, ammunition and engineers. Shortly afterward we find the French Sixth Corps, a part of BAZAINE's army, defending St. Privat against the German attack, and its want of artillery, ammunition and engineers, contributing largely to the defeat of the French in that battle.

But great as were the indirect results of the destruction of French communications by the Prussian cavalry, it is well known that Americans have not to go abroad for the study of cavalry raiding.

Throughout the advance upon Paris the German armies were covered by swarms of cavalry. The French cavalry was generally retained in their columns. The German armies advanced with perfect unity of action and mutual support, and met with unprecedented success in every engagement. The French moved blindly and without concert and met with nothing but defeat. While this may have been partly due to German numerical superiority and better preparation, the false and aimless movements on the one hand, and the prompt and concerted action on the other, prove conclusively that the information gained by the cavalry played no secondary part.

The detached operations of cavalry can be conducted only by troopers previously and thoroughly instructed in individual action. The open and widely diversified country surrounding many of our frontier posts affords every possible advantage for such instruction. The junior officers and non-commissioned officers should be thoroughly and practically trained in field reconnaissance, military sketching, and writing brief and intelligible, but at the same time comprehensive reports. Every individual soldier should have his faculty of observation, and of correctly reporting the results thereof, fully developed by actual practice.

Until this is done, the fact that we are the best marksmen, and possibly the best riders in the world, will be of but little avail.

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METHODS OF CARRYING THE CARBINE MOUNTED.

BY FIRST LIEUTENANT WILLIAM H. SMITH, TENTH U. S. CAVALRY.

AS a new carbine, which will be lighter and shorter and better in every way than the one we now have, is one of the possibilities of the near future, a few remarks on the way it is carried in different cavalries may not be out of place.

The English carry the carbine in a long boot, which is attached to and hangs straight down from the right side of the cantle. The advantages of this method are, that the carbine hangs entirely in rear of the man's leg so that it does not interfere with his seat or the management of his horse. The barrel and lock mechanism are protected from the mud, so that it would never be necessary to dig the mud out of the muzzle and from the front sight before the carbine could be used, as so often happens with our present method of carrying it.

The disadvantages are, that the whole weight of the carbine is borne by one part of the saddle and, when any gait faster than a walk is taken up, there is a constant pounding or succession of blows on one part of the horse's back, which has a strong tendency to make a sore. This, by the way, may have something to do with the constant complaint of sore backs, of which we hear so much from the English service. In addition to the above disadvantage, should the trooper become unintentionally separated from his horse, as by a fall, or other accident, the horse would carry off the carbine, leaving the trooper practically defenseless.

The Germans carry the carbine in a short boot, which is swung from the right side of the pommel in such a way that the muzzle points to the front and downwards and the stock extends back over the right thigh. This seems about as awkward a method of carrying the carbine as could well be devised, and has only one advantage as

far as the writer could see—that of not interfering with the movement of the trooper's leg in managing his horse.

The French carry the carbine slung across the trooper's back by a strap very similar to the one on our infantry rifle. This, from a theoretical point of view, seems to be the best method of carrying the carbine. It combines all the advantages—that of being always present with the trooper without tying him to his horse when mounted, as our method does; the weight of the carbine is transmitted to the horse through the cushion of the man; it does not interfere in the slightest with the trooper's seat or the use of his legs; it is entirely out of the way in mounting and dismounting; it can be readily unslung and made ready for use; none of the parts are liable to injury by rubbing or being bent out of shape, and it is to a certain extent a protection from saber-cuts from the rear.

The only question is, whether or not the discomfort of the trooper is sufficiently great to counterbalance these advantages. The writer, during the summer of 1891, spent some three weeks visiting different French garrisons, and he asked probably a score or more of French troopers and quite a number of officers, if much discomfort was felt in carrying the carbine across the back, and they invariably answered, "No, not after a little practice." They stated that, when a recruit first began carrying his carbine at mounted drills, it made him a little sore for probably a week or ten days, but that he never noticed it afterward. And it must be remembered that the French drill much more, and at more rapid gaits, than is customary in our service.

The Russians also carry the carbine in this way. The following is an extract from Captain F. V. GREEN'S "Russian Campaign in Turkey": "The muskets and carbines carried by mounted troops are all protected by a leather case, and are always worn slung over the shoulder from left to right, the muzzle up and projecting above the left shoulder, the butt behind the right thigh. This method of carrying the gun was adopted after competitive trials between it and the manner of hanging from a sling, muzzle down, in use in our service."

Our present method of carring the carbine has all the disadvantages, and none of the advantages possessed by the other methods mentioned The carbine is very much in the way mounting and dismounting. It ties the man to the horse, rendering it almost impossible for a man to save himself by jumping off, in case his horse falls. The writer has knowledge of several men who were seriously hurt by having their carbine-sling attached to the carbine, when mounted

as contemplated by our Regulations. The weight of the carbine is all borne on one part of the saddle; it cramps the use of the trooper's right leg, deranging his seat and preventing him from using that leg, except to a very limited extent, in managing his horse; the rear sight is always getting bent and worn. The writer has several times seen from ten to twenty rear sights in a troop rendered unserviceable by a few months' mounted drill.

In muddy weather, the muzzle gets clogged up with mud so that it is sometimes necessary to occupy several minutes in cleaning it out before the carbine can be fired. The writer remembers to have examined the carbines of a troop of cavalry which had made a march of about twenty miles over a muddy road, and fully one-third of them were so clogged with mud about the muzzle that no accurate aim could have been taken on account of the front sights being entirely hidden; nor could the carbines have been fired without danger of rendering them unserviceable, on account of the muzzle being filled up with mud. In fact, our method of carrying the carbine seems akin to our regulation bit, in that it has nothing whatever to recommend it. And it seems inexplicable that a board of experienced cavalry officers could have recommended either.

As to the other method of carrying the carbine, sometimes used in our service, viz; the "cow-boy" method, under the left leg, it has all the disadvantages mentioned under the head of the English method, besides deranging the seat and interfering with the use of the leg.

FOURTH OF JULY EXERCISES.

By First Lieutenant M. F. STEELE, Eighth Cavalry.

ARE the exercises now customary at our military posts in commemoration of Independence Day what they ought to be? This is a question worthy of some consideration. The first point to settle is, what are the exercises for? The answer is, for the pleasure and amusement of the garrison, mainly the enlisted men. But not them alone; every person of the garrison ought to take an interest in them, either as spectator or participant. Actors play best to a full house, and a house full of sympathy and enthusiasm. So these sports, to be entirely successful, must entertain all, must have applause from the ladies, shouts of joy from the children—the gallery as it were—and cheers of encouragement and rivalry from officers and men.

The partisan excitement of these, however, must be kept within bounds and not allowed to reach bellicose proportions. Such a state with officers usually effervesces in the form of words and froth; not always so with the men. Most of us have known the Fourth of July tug-of-war between two troops, and the barrel of beer thereafter, to be followed by war in reality, and its aftermath, the guard-house. This is not a fitting sequel to the celebration of our most cherished holiday. There ought to be nothing in a soldier's recollection of the Fourth of July, which could make him wish it had not been.

But tugs-of-war and base ball and foot races and many other of the usual Fourth of July games are manly and well enough, if there were not at hand something better and more suited to the occasion and the participants. But are there not other sports in which soldiers could engage, more to their own craft and equally entertaining to them? Base ball professionals don't celebrate their holidays by playing soldier; why should we borrow their trade for our holiday contests? Cannot we find athletic exercises within our own calling just as pleasure-giving and more to our profit than any we can borrow from others?

The National Guard sets us the example with their competitive drills. Why not take up their trail in this and outstrip them, as we have done in the shooting matches they taught us at Creedmoor?

If any one doubts that interest is taken in their competitions, he needs only to see a successful company return to its home town, to have all his doubts cast before the winds. The evening the Fencibles of Washington got back from their successful contest at Omaha, the whole city appeared to have turned out to greet them, and to have gone crazy with welcome. Their triumphant march down Pennsylvania Avenue, under a skyful of torches, and behind an array of brooms held aloft, suggestive of their "clean sweep," was one of the grandest and noisiest spectacles one could witness. The shouts and yells of delight and pride that rose from the thousands of throats along their way could not have been louder or more sincere if the Fencibles had come back from the conquest of a nation. The crowd that turned out to see the "grizzled veterans of the sixties" march over the same course a few weeks later, was larger, because the Grand Army brought 300,000 strangers to the city with them; but its enthusiasm was that of a Quaker meeting beside that of a Methodist revival.

But we don't want any fours-right-and-left competitive drills for our holiday sports. Wherein would be the holiday? We can get enough of this healthful exercise to keep our bodies in sound, active condition, with our regular drills daily, "Saturdays and Sundays excepted." But with a drill book as full of varied and interesting athletic exercises as ours is, no cavalry garrison must needs go far out of the way of their own subject, to find entertaining sports for the Fourth of July or any other day.

Is it not a pity that the news correspondents at our military posts should be subjected to the humiliation of sending to their papers such Fourth of July "stuff" as we read, or rather don't read, in our army papers now-a-days? Two of these, anent the last Fourth, may be quoted for the purpose of the point. Thus the first: "The glorious Fourth was celebrated in fine style here by races, games, etc., lasting from 7:30 A. M. until 9 P. M. I enclose a list of the sports with names of prize winners. The base ball game and tug-of-war attracted the most attention, but the high-kicking, potato and wheelbarrow races, made lots of fun." With an energy that wore from half-past seven in the morning to nine o'clock in the evening, what excellent timber there was in this garrison for military athletic sports! And it speaks well for the good taste and manly spirit, that the tug-of-war and the game of ball were most appreciated.

The other letter runs as follows: "After the National salute, a

parade of the infantry and a show drill by the cavalry, and the usual athletic sports and exercises of the men—foot races, potato races, wheelbarrow, sack and three-legged races."

Of the lists here, the foot race is the only contest having any relation to the military profession; and the further it is kept apart from it the better. The fleetest of foot is not always the first to reach the enemy's line, and men do not need to be trained in getting away from the fight in a hurry. Slow feet can bear a strong heart forward faster than swift legs a faint one; but the latter may be a temptation to quit the field with undue haste.

The wheelbarrow, with its comrades, the pick and the shovel, has played a considerable part in the garrison life of our soldiers; but already we see hopeful signs of its giving way to the saber and carbine.

For lack of knowledge, I can have nothing to say of the potato race, which figured at both posts, or the three-legged race. I have never seen either, and look in vain for explanation of them in the handbooks of sports, in which polo and golf and other athletic games are described. Sack races have, since the days of slavery, been a favorite amusement among the negroes at the South. Our correspondents said nothing of the greased pole or the greased pig, but these cannot have been left out of the programs. Doubtless they were included in the "etc." It is to be presumed that there was no convenient pond for the tub race, and no available goose for the "gander pull." But surely the Quartermaster could have entered stock for the slow mule race.

Now, instead of all or any of these, which afford only fun, and this of not the highest order, can we not have a program of sports for our favorite holiday that will give amusement and entertainment, and at the same time encourage soldiers in the attainment of skill in their own chosen trade? And even more. Can we not make of the day a lesson in patriotism? Might we not include some feature that would suggest, in terms plain enough to be understood by the newest Norwegian recruit, why this day is specially selected to lay aside all duties "except the necessary guard and fatigue?" I would not propose a spread-eagle speech, but it might be well enough to open the day as the cadets do at the Military Academy, by reading the Declaration of Independence;* then let the military sports follow.

* I asked five enlisted men the question: "Why is the 4th of July celebrated as a National holiday?" Not one of them was able to answer the question. One of these five men was a recruit; another was a trumpeter, an American, in his second enlistment; another was a German, in his second enlistment; another was an Irishman, in his seventeenth year of service; and the fifth was a colored trooper. I would also say that these five men represented the patriotic ignorance of four of our cavalry regiments.

When it comes to mentioning exercises that would be suitable for the program, the only difficulty is to select. The cavalry drill regulations are full of them.

One of the favorite sports among the young folk in some sections of our country, is the "tournament," a harmless relic of the old jousts, in which our nowaday knights tilt at gay-trimmed rings, instead of at one another. For months before the day of the tournament, the young men are practicing for the contest; and, as one rides along the country roads, it is no unusual thing to see beside the farm fence a line of little wooden scaffolds with rings dangling from them, and a well ridden track along under them. Each man that enters the contest rides for his sweetheart, and the winner crowns his queen. Prizes are awarded, too, one of which is always to the best horseman. Why can we not have something of this kind for the enlisted men, only substituting the saber, decked with ribbons if they please, for the gilded and decorated lance used in the tournament of the civilian?

Instead of the tug-of-war, which does well enough for sailors and foot-soldiers, let us have wrestling on horse-back. In this, one troop might be put, man to man, against another.

Instead of sparring matches, let us have fencing with wooden sabers, mounted.

Give a prize to the man who has the best trained horse, taking into account all things that go to make up the training of a perfect cavalry horse—the horse that is thoroughly obedient to his rider's will; that is steady in ranks; that can be ridden out of the rank and away without a neigh or a show of opposition; that will take the cavalry paces and at the prescribed speed at the will of his rider; that will stand pistol fire without so much as the twitch of an ear; that will try any hurdle or ditch his rider puts him at; that fears nothing so long as his master is on his back; and (since it is part of the training given in the drill-book, and is something easily taught a horse) that will lie down at the command of his master, whether he be on his back or on the ground.

Let a prize go to the best horseman, each contestant to ride his own horse; and another to the best rough-rider, if a bucking bronco is at hand to practice upon. Still another prize might be given to the man most expert in the horse-back gymnastics prescribed in the drill-book, and another to the one most dexterous in the saber exercise, etc., etc.

Horse-racing is sometimes a feature of Fourth of July programs at cavalry posts. Is this not a bad practice both for troopers and

troop horses? Is a horse really ever fit for the ranks after he has once run on the track? We are taught that all our training and drill is mainly to prepare for the charge, and that this is the true test of cavalry. Is not the race-horse very liable to bolt as soon as the charge begins? He has been trained to outrun his fellows, and he will do his best to prove his education.

And as to the men. Horse-racing in a troop, especially where the troop officers take extreme interest in it, encourages among the men a spirit of gambling, which every one will admit is hurtful to discipline. Without considering it from a moral point of view, what is the practical effect of gambling in a troop? In a garrison? Does it not rob the innocent many of their small pay to fill the pockets of a few sharpers, professional black-legs, perhaps, who have enlisted for the sole purpose of plucking their comrades? It leaves debts at the Exchange and with the laundress and the barber and the troop shoemaker, and often leads to desperation and desertion.

THE U. S. CAVALRY REMOUNT.

BY GERALD E. GRIFFIN, D. V. S., VETERINARIAN, FIFTH U. S. CAVALRY.

IT is a fact, well recognized by those most immediately interested in the matter, viz: cavalry regimental, squadron and troop commanders, that the cavalry remounts furnished the U. S. Service are, with each succeeding year, becoming more inferior in every essential attribute that goes to make up a cavalry horse. By this it is meant that those animals are more leggy, more narrow-chested, more flat or slab-sided, more goose-rumped, and more slim-barreled, without any of the corresponding compensations.

But these, although serious defects in themselves, are reduced to comparative insignificance by the marked tendency of the animals in question to exhibit a poor conformation of the legs and feet, although one of the prime essentials of a cavalry horse is that he possess a sound and well proportioned locomotory apparatus. Another point of degeneracy, often noticed and remarked upon by troop commanders, is that the standard of intelligence in relation to remounts is on the decrease; and although the head of the animal appears to increase in size, the volume of the cerebrum seems not to present any such appearance; and although they may remain with the troop for two or more years, they still continue stupid and dull, even when the climatic influences are in their favor.

The horses now furnished for remounts are more subject to side-bone, ringbone, splints and spavins than formerly; this can be, without error, attributed to weakness of bone and defective conformation. The backs are longer, and very often present an inclined plane, which is a vile defect in a saddle animal. The long gander neck, to which is attached a large head with long, sluggish ears, is seen more frequently, and the vacant looking physiognomy and unexpressive eye are considered almost as a part of the cavalry remount. So much has this impressed itself upon cavalrymen gener-

ally that when an animal arrives that shows marks of intelligence, he is immediately put down as being vicious, or defective in some prominent quality, and as having been sold into the cavalry service for that reason.

Nearly all the horses furnished are hard to keep in fair condition; they possess poor staying qualities and are easily fatigued. The greater number are too large, for it has been demonstrated again and again in European armies, as well as in our own, that the more compact the cavalry animal is, the more labor he can perform; and everything else being equal—the weight of rider and equipment remaining the same—the smaller horse will outlast and do more work than the heavier animal in the field; while in the garrison his vitality is greater, he is easier kept, and the mortality and liability to disease reduced almost one-half.

There is, however, one point in favor of the animal now furnished, his color is continually improving; this is especially the case with the bays.

In striking contrast to the degeneracy of the cavalry horse is the continued excellence of the mules purchased for military purposes: this contrast is probably due to the steady demand for mules for draft purposes alone.

Why cannot the service purchase as good a grade of cavalry horse for the same sum now as it did ten years ago? The principal reason is that the tendency on the part of the small farmer, from whom the supply of remounts is largely obtained, is to breed for "roadsters," as the price paid for this class of horse is greater than that paid for "streeters" or tram car horses, which after all is about the kind of animal furnished the U. S. cavalry service. It must be admitted, however, that the demand for saddle horses is on the increase all over the country since equestrian exercise has become so popular; but the saddle animal desired for this class of trade, is, in every respect, superior to the miserable looking cavalry remount; and those who produce for this market would never think of raising saddle horses for the cavalry service at the present price paid by the Government.

Why are the defects in the remounts now furnished so numerous? Because in his effort to breed up to trotters or "roadsters" from poor dams and cheap sires, the small farmer who breeds horses as he would plant a crop of corn, loses sight of the eternal fitness of things and sacrifices everything to leg and "reach;" and when we have added on to this length of leg, the big head of the trotting strain, the flat foot inherited from some lymphatic dam, the bone

out of proportion, and the long, half developed neck, part trotter, part chunk, is it to be wondered at that the majority of the present supply of remounts offend the eye and sensibilities of the true cavalryman? It has been remarked that the color is improving; this is due to the solid colors of the mongrel trotting sires who inherit them from *their* standard sires and bequeath them to their progeny.

Cannot the farmer raise a good saddle horse and sell it to the Government for $150.00? Let us see. A farmer has a good mare; the question with him is, will he breed to a local trotting stallion, paying from $25.00 to $100.00 for the privilege, and raise a good roadster which may develop into a "Keno P." or a "Nancy Hanks," and possibly sell for from $250.00 to $500.00? Or will he breed to a saddle stallion (which by the way are scarce), paying in the neighborhood of $40.00 for the service, keep the offspring for at least five years and sell to the United States for $150.00? In the farmer's place, the writer would breed to the trotting strain every time and run chances on receiving a large price for the product, especially when it is remembered that the horse cannot be sold to the Government until five years old; and then, if he uses him for driving or hauling in the interim, he impairs his saddle qualities considerably.

Within the past few years the writer has frequently read articles in military journals referring to the gaiting of cavalry horses, their saddling, bitting, etc., and has noticed two or three schemes suggested therein for improving the quality of cavalry remounts. One of the latter, which, by the way, is the best, going so far as to propose the establishment of a Government horse-breeding farm.

As to the gaiting of the horse now furnished, it is a waste of time and patience except in a few cases; for one might as well endeavor to give a saddle gait to a cow as to give it to the great majority of the present remounts. What, it is asked, can one do in this direction with a mongrel, stupid, bull-headed, thick-skulled brute, who only possesses intelligence enough to know when he is hungry; and who, after years of drilling and training, even in the hands of a competent rider and fair trainer, will make a right or left turn or wheel in obedience to the bridle as awkardly as if he were a dismasted lugger in a heavy seaway, except to "pound him along" as the service expression has it, until he "plays out;" then condemn him and have him replaced by his full brother or some near relation. You cannot saddle him properly, as his back is generally built for a dump cart harness; and it matters not whether your theory is to place your saddle over his kidneys and girth him around the abdomen or use a fore and aft girth and place the saddle on his withers, the position

will change fifty times a day on the march, and sore back be the result.

With the real saddle animal, raised for this purpose, the saddle will set exactly where it belongs and under all ordinary circumstances remain there, even though the girth should slacken; and something might be done as to bitting, but not with the present instrument of torture. The present bit has, however, a redeeming quality for which it has never been given credit so far as is known: the curb strap slot is referred to, it being furnished with cutting edges that can in a few days bite through the strap with ordinary use, thus preventing the rider from fracturing the animal's lower jaw while, at the same time, it gives the horse a chance to run away and thus square accounts with his rider for having pulled too hard on the reins.

The Government breeding-farm idea is a good one and is deserving of serious attention; but until this idea has passed through the circumlocution office, which may be in twenty years from now, the only means at hand for improving on the present quality of cavalry horses is to increase the price paid by the Government to two hundred dollars each, and purchase the animals from the producer. This can be done by the service as well as by contractors or by express companies and other large horse-using concerns. It should be done by a board of officers detailed from the regiment for which the remounts are intended, and the board should be held financially responsible for all defective animals furnished. The board should be named by the regimental commander, and composed of those officers who can tell the difference between a horse and a "plug." The age should be from five to six years, and as the horse is only fully developed at this age, no animal should be taken below this standard. Greys and roans should not be purchased, except a few of the former for bands; greys are too conspicuous in the field, while it is difficult to collect a troop of uniform color in roans. In the present state of the cavalry service, the writer cannot see why mares could not be used to advantage as well as geldings, mares being more tractable, more easily managed and more intelligent.

It may be objected that two hundred dollars each is too high a price to pay for remounts; but when the class of animal is taken into consideration, the length of time he will be serviceable and his perfect adaptation to the service demanded of him, it will be admitted that the number of animals condemned annually will be reduced at least one-half; consequently, the number to be purchased will be reduced to a corresponding extent, and the liability to disease will

be greatly reduced because the horse will be more competent to perform the work required of him.

There are very few cavalry officers in the service today who would voluntarily use the regulation bit on their own private mounts, but they are forced to use it on the troop horse. This plainly shows that the regulation article is not looked upon favorably by those who are in a position to observe its practical workings. A stout, nickel-plated Daniel's bit, with three sizes of sliding bars, and with a nickel-plated curb chain, should be adopted and used upon all cavalry horses; it is as effective as the bit now furnished, and is more humane. Aluminium bits might be used instead of nickel-plated iron or steel.

The veterinarians in the service, who may read this article, will probably be surprised that any interest outside of a sick animal should be manifested by one of their colleagues in the army. The writer will admit that the present pay and prospects are indeed a poor inducement to excite interest in one of our number on subjects military, outside of our immediate duties. But the class of horses furnished for remounts is degenerating so fast, while the class of recruits now enlisted (since regimental recruiting has become the fashion), is so vastly improved that he (the writer) has been forced out of his accustomed rut in an endeavor to have the remount keep pace with the advancement in intelligence of the product of the new system of recruiting and, while out of it, to place the cavalry horse question and a few kindred subjects in what he believes to be their true light.

PROFESSIONAL NOTES.

REMARKS ON THE GERMAN CAVALRY.

I hope that the author of "The Tactical Use of Mounted Troops," Vol. V., No. 18, JOURNAL of the Association, will excuse me for taking exception to some of his statements and conclusions concerning the German cavalry.

The Germans may not be the best horsemen in the world; I do not think that their best riders by any means equal ours; but I have seen some riding, much of it in fact, among our own officers and men, which for poorness cannot be equaled in any of the many German regiments that I have seen. What the German lacks by nature he most certainly succeeds in making up for by thorough, conscientious, systematic hard work. The German recruit is not put on badly broken horses with clumsy, worthless bits, and then put through the saber exercise before he has any idea of how to control his horse. Nor is the average intelligence of the non-commissioned officers and men of the German cavalry to be compared so easily with that of our own men. Let me dwell on the word average; the non-commissioned officers of the German cavalry are all old soldiers who have reënlisted for the purpose of being promoted, and they are masters of their trade as it is taught them. The captain is responsible for these men, and he can little afford to present inefficient men at the many inspections, and sanction them as his ideal of perfect soldiers.

In the brigade with which I served in Düsseldorf, all the privates were volunteers coming a year or two ahead of time in order to get in the cavalry. They were young, athletic men, most of them sons of well-to-do parents, nearly all receiving liberal allowances of money from home, all having exceptionally good private uniforms which they were allowed to wear when off duty, even to lighter, better made sabers. This does not include the "one year volunteers," young men of the best classes of society, including noblemen, who, on passing the necessary examination, serve but one year. During this year they receive the successive non-commissioned grades and, finally, return to the cavalry or train as reserve officers; the course of

instruction that this class receives, the maps made by them, and their military theses might well be used as models at West Point itself.

To return to practical instruction. The oldest and best horses are selected for the recruits after the maneuvers; and they keep up about two hours hard drill each day from October till April*, when they are presented for inspection. One of the troop officers has charge of them permanently and, under him, the senior non-commissioned officers instruct permanent squads, each emulating the other. They ride first on blankets, then with saddles and stirrups, finally on saddles without stirrups: briefly, the result is that, at the inspections, these men go through the school of the trooper perfectly with both lance and saber. One feat is to go at a run through the long jumping chute, over four bars and hurdles, two embankments onto which the horse jumps, then over an artificial hill with hurdles half way up and half way down, two ditches and a hurdle with ditch. All this without stirrups, the reins loose on the horse's neck and the lance held horizontally over the head with both arms extended. Every man must do this, no exception.

After this comes the work at the headposts; straw heads, about six inches in diameter, on posts with sliding weights to draw the displaced head back into position, serve as targets, the heads being at about the height of the trooper's chest. Leaving out the theory on the subject, I can testify that very few of these heads are missed; and from personal experience I did not find the lance by any means such an inaccurate weapon. The targets on the ground are straw heads pinned to a two-foot rope and uniforms stuffed with hay; they are not missed any oftener than the heads on the posts and, when they are missed, no catastrophe occurs due to the manner in which the thrust is made: the lance vertical, point down, hand about height of the trooper's head, back of hand to rear; the lance is simply dropped down with slight effort; it revolves on the wrist as an axis, whirls into place, being caught under the arm, horizontal, point to the front, and the trooper reverses his hand. I have never seen a lancer unhorsed while practicing at heads. However, all this discussion about the lance can, in my humble opinion, have very little practical use for us.

During my tour of service with the German cavalry, I heard arguments for and against the lance in combat; cases even cited by the score, until I became thoroughly confused on the subject. Fencing with the lance convinced me that, if I met a lancer and we both had all the room we wanted, I would shoot at him from a good distance and leave him all my room. As everyone is allowed to give his theory, mine is, that two unsupported thin lines (single rank) charging, all other things being equal, one with lance and one with saber, the casualties resulting from the first shock with the lance would cause the sabers to flee, and in the flight they would suffer

* A West Point cadet gets ten rides per month, ten months per year; in three years about 300 rides. A German recruit gets two hours per day, six days a week; in twenty-six weeks 156 rides

extremely unless they had very fleet horses. Now, double and triple these lines, so that two or three shocks would occur in rapid succession, bringing on a real hand-to-hand fight, and suppose the sabers to be short for quickness, blades thick, sharp, almost straight, and well pointed, with handles fashioned for the human hand (see the new Prussian cavalry saber), and in good, active, plucky hands. I believe the lancers would leave the field and leave a good many of themselves on it.

The question then comes, "Will the saber cavalry have time to form its two or three lines?" We must imagine a quick, decisive movement, with long columns stretched out under cover from artillery fire, that must be suddenly got into shape, to make this compact, overwhelming, sweeping charge, the rear lines being close enough to prevent the first shock of the lancers from hurling their first line back upon them. I must say that such a problem presents more difficulty to me than to the friend of General DRAGOMIROFF, who, with virgin parade sword, tightly wedged in its scabbard, and probably hanging on the study wall, bores everyone with theories on fencing.

The lance is out of the question with us Americans; our country is not made for it. I experimented once with some troopers going through a forest, and that settled my views on the lance. I have exercised with it on a cold, wet day, and that prejudiced me against it. I have seen troops of lancers dismount to fight on foot, and that did not come up to the American ideal of this not unimportant function. I believe that, going on in our way, mounting our men as we do, training them (or rather not training them) as we do, and getting some of the specimens that we do, it would not pay us to make any charges against European cavalry, except as a matter of interest for the latter. On the contrary, give us real American riders, a good bit and half decent horses, a systematic method for training the *individual* man and horse, inexorable, unflinching daily drill, if only one hour a day, and we will soon show better results.

We must have drill every day, even if each post must build a house to drill in. Our friends in Quebec don't stop drilling, and they have a hard climate up on that plateau. It does not take a grand structure with iron arches to suffice for a riding hall. The regiments that I saw last winter in Düsseldorf had little halls, thirty yards by sixty; some of the old dilapidated sheds of the other regiments were not even that size. Into these rough shops go awkward, nervous remounts and raw recruits in the autumn; from them, in the spring, come cool, sharp-stepping, flexible chargers and soldiers, upon whom the world looks as the equal, if not the best of any on the continent. Excepting the horses ridden by recruits, the others get but *one hour's* exercise in the day.

I will not enter into the detail of the practical method in which the winter training is conducted. Suffice it to say that, as a result, every horse in the ninety-three regiments steps the same number of yards in the same time at the various gaits. Let a brigade from

Pomerania be put in division with one in Alsace, and it is like setting together two blades of the same scissors. There is utility in this that needs no further discussion among practical Americans. But to come home again. We seem to have the best saddle in the world, and we made it ourselves. No other approaches it. Why can we not have the best saber? We believe in the saber: our cavalry does; and it will make others believe in it, the chance occurring. Ours is not a good saber; it has a bad handle, a bad grip, bad guard and bad steel in the blade, which is not shaped well. A great many people in our supply departments do not believe in the saber as a weapon: but it strikes me that the average carpenter, or other skilled mechanic does not depend on the storekeeper for the perfection of his tools; then why should we be compelled to depend on any judgment but our own? We expect to use these weapons, and it would seem that our opinions should have some weight.

POWHATAN H. CLARKE,
First Lieutenant, Tenth Cavalry.

GRAPHIC COMPARISON OF THE ACTION OF THE SHOEMAKER AND DWYER BITS.

In the accompanying figure, AB represents a wooden bar, to which rubber bands are attached at O, D and D^1 by means of small screws; and strings at E and E^1 by means of tacks. Distances: DO is one and three-quarters inches; OE is three and one-half inches; OD^1 is two inches; OE^1 is five and one-half inches. Thus arranged, the bar is placed on a wooden board and opposite O, at a distance of one and three quarters inches a nail, G, is driven on one side; and on the other a nail, C, at a distance from O equal to distance DG. Put the bands DG and OC over the nails G and C taut, yet so they exert little or no pull. Take hold of the string EF. We now have a bar, DE, of the same dimensions, and similarly acted on, as a bit constructed on the Dwyer principle, properly placed. Pull on the string FE until E moves to E_2, four inches from E. DE takes the position D_2E_2; O moves to O_2, a distance of $\frac{22}{20}$ inches; D moves to D_2, a distance of $\frac{10}{20}$ inches.

We assume that the distance passed over by a point represents the force transmitted to that point; therefore, the force transmitted to O, as compared to the force transmitted to D, is as 22 is to 10; that is, with the Dwyer bit a pull on the reins equal to the pull we applied to E would produce an effect on the bars of a horse's mouth, that, compared to the effect on the chin-groove, would be as 22 is to 10, or the effect on the bars would be two and one-fifth times the effect on the chin-groove, which is as it should be.

Detach the band DG and put on the one D^1G; put the band OC out to OC^1: let go the string EF and take hold of the one E^1F^1. We now have a bar D^1E^1 of the same dimensions, and similarly acted on, as the Shoemaker bit when properly placed. Pull until E

moves four inches; O moves to O^1, a distance of $\frac{2}{10}$ inches; D^1 moves to D^1_2, a distance of $\frac{24}{10}$ inches. Therefore, the pull given applied to reins of the Shoemaker bit would transmit a force to the bars of the horse's mouth, that, compared to the force transmitted to the chin-groove, would be as 22 is to 26, or the force exerted on the chin-groove is $1\frac{2}{11}$ times the force exerted on the bars. Consequently, the horse attempts to avoid the curb-strap and pokes out his nose; while with the Dwyer bit, he attempts to avoid the mouth-piece and lowers his nose.

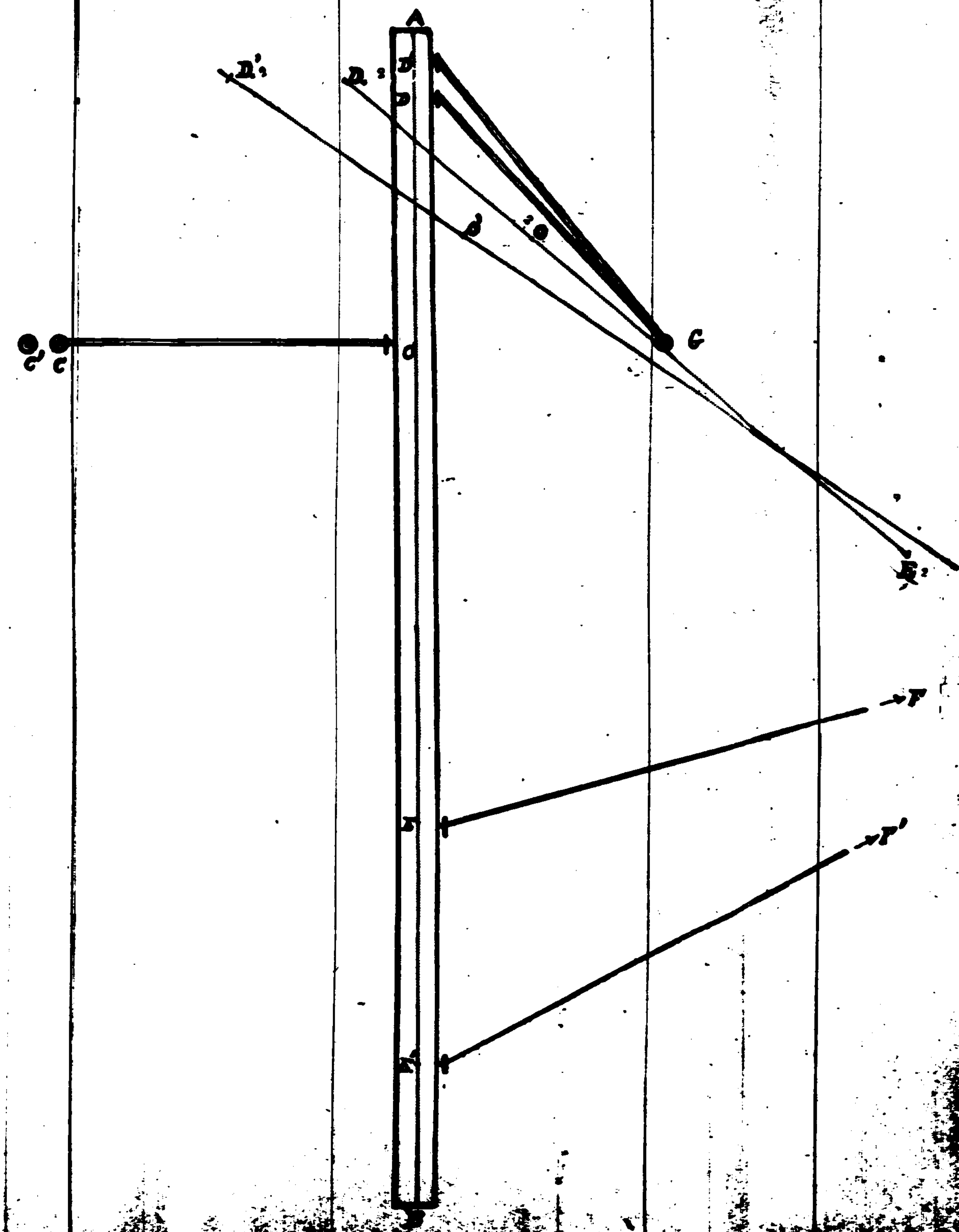
S. D. ROCKENBACH,
Second Lieutenant, Tenth Cavalry.

A LIGHTER HORSE-SHOE.

Horse-shoeing has long been considered a necessary evil, and all our studies should be directed toward its application in a manner that can effect the least possible harm. Nature has provided a horny case for the foot, which is adequate so long as the animal treads upon soft verdure, which at the same time affords him nutriment; as soon as art, however, removes him from his native fields to hard and gravelly roads, this defense is no longer sufficient protection; therefore it becomes necessary to guard even the hoof. This we do by nailing upon it a rim or half-circle of iron, which we denominate a *shoe*. The essential difference between the natural defense and the one art has invented, is that the former, while it is sufficient for ordinary protection, is yielding and elastic, while the iron shoe puts a total stop to all that play of the horny case with which nature has endowed it.

Shoeing is an almost unavoidable consequence of the horse's domestication, and we are at times driven to the conclusion that an artificial protection of some kind for the horse's foot is very frequently one of the penalties which civilization exacts. There is, however, a large and important class of horses to which shoes are not an absolute necessity, namely, our agricultural horses. The nature of their work, the slow pace at which it is performed, and the character of the ground over which they toil, all unite to render artificial protection for their feet, save under exceptional circumstances uncalled for. Among army horses which are called upon to do a great amount of traveling and load-carrying on mountainous and rocky roads, the horn composing the hoof undergoes an amount of wear greater than nature can compensate; and should the feet be left unprotected for any length of time, the living sensitive structures within would become exposed and irritated by contact with the ground, give rise to pain, lameness, and inability to work. To guard against this serious result, several shoes have been devised, some of which showed good results, others proved worthless.

In recent times the "Goodenough" shoe has had wonderful qualities claimed for it. It differs but little from the ordinary hunting shoe; it has several projections cut on the outer margin of its



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lower surface, which may prevent slipping so long as they last, but in a short time they are worn away, and then it has nothing to recommend it beyond the ordinary hunting shoe. This shoe is made by machinery and, like other machine-made shoes, is, from the material of which it is manufactured proving either too soft or too hard, likely to wear too rapidly or to prove brittle.

To apply a shoe in such a manner as to allow the frog to receive a due amount of pressure, has always been the aim of those who have made the horse's foot an object of careful study. To this end I desire to draw the attention of those interested in the welfare of our best friend, the horse, to a method of shoeing which is, according to my idea, physiologically correct, and which I should like to see adopted throughout the army.

Knowing that the horse's foot is admirably constructed to perform certain definite functions, and that the hoof under ordinary conditions, is designed to act as the medium through which the most important of these are carried out, but that its circumference is liable to be broken away and worn when rudely exposed, we have only to substitute for a certain portion of this perishable horn an equivalent portion of more durable metal, and the hoof is secured from damage by wear, while its natural functions remain unimpaired.

With the method of shoeing that I advocate, the hoof would be left in a natural condition, so far as frog, sole, and wall are concerned; and I would imbed a narrow rim of steel, no thicker than the wall around the lower circumference of the foot, that exposed to wear, like the iron heel of a man's boot.

I will now briefly describe the way in which the work should be done. The sole and frog as well as the bars are left unpared, the crust or wall is beveled off at the edge by the rasp and by means of a knife with a movable guide; a groove is made along this beveled edge to receive the shoe; this groove is made a little more shallow than the thickness of the sole, and slightly narrower than the wall, not extending beyond the white line separating the sole from the wall. Into this groove is fitted the shoe; this is a narrow, but deep band of steel, narrower at the top than at the bottom, and forged in such a manner that its front surface follows the slope of the foot. It is perforated by six oval nail holes of small size, and could be provided with a clip at the toe; its upper inner edge is rounded by the file, to prevent it pressing too much against the angle of the sole, and the branches are narrow and beveled off toward the ground. The nails should be very small and have a conical head and neck, and be of the best quality. It is best to fit the shoe in a hot state, as it must have a level bed and follow exactly the outline of the wall. After it has been fitted it is advisable to remove, with a small drawing knife, a little of the horn from the angle of the groove in the hoof to correspond with the rounded inner edge of the shoe; this insures a proper amount of space between the latter and the soft horn at the margin of the pedal bone. In strong hoofs the shoe can be buried almost entirely in the groove, but in those which have

flat or convex soles, with low heels, it would not be safe to imbed it too deeply.

The application of the hot shoe in fitting should not extend beyond a very few seconds; it should then be tempered and nailed on in the ordinary manner. The nails should be placed wide apart at the toe and rather close at the heel; every nail must be driven in sound horn, otherwise the shoe, being so narrow, may get a branch bent out, and nothing more is needed than to lay the clenches down evenly on the wall; no rasping is required. When the shoe is attached to the foot, it is readily perceived that a portion of the sole and bars, and the whole of the frog meet the ground as in the unshod state. This shoe being thicker than wide it possesses a certain elasticity, and adapts itself to the successive movements of dilatation and contraction of the horny box, however limited they may be.

The great advantages of this method of shoeing consist in its simplicity, when farriers have been made to understand it; its placing the hoof in a natural condition, so far as its ground-face is concerned; the small number and size of the nails required to retain it; the lightness of the shoe and the security it gives to the horse in motion. Experiments made at my station with this shoe have up to date proved satisfactory.

In conclusion, I should like to remark that in our army the subject of farriery is often looked upon much as it is in civil life—as a matter that concerns the farrier only, and tradition and routine extensively prevail. In saying this, however, I do not intend for a moment to insinuate that the army veterinary surgeons are averse to giving their attention to a most important, though it may appear a minor, part of their duty. On the contrary, many of them do so and with advantage to the service; but there is not the same encouragement offered either to veterinary surgeons or farriers in this respect as there is in European armies. In the French army, for instance, there are schools and professors of farriery, the most notable of these being at the Cavalry School of Saumur. In these the farriers are regularly trained to a uniform and approved system before being posted to different regiments, and direct encouragement is given to these men by the institution of competitions, in which the most successful are rewarded by medals and gifts of money. It is scarcely necessary to say that in this country nothing of the kind is attempted. The Government does nothing to improve or encourage veterinary science in the least; hence the enormous losses it has sustained for so many years. With the exception of, on very rare occasions, the distribution of a prize or two at some local agricultural show to farriers, who imagine that paring and rasping, and a fantastically wrought piece of iron, constitute the acme of shoeing, the subject is thought unworthy of notice.

The remedy for this, of course, should be, in the first place, the opening of schools. A profound knowledge of the anatomy and physiology of the horse's foot is not absolutely necessary to the farrier; but a general acquaintance should be required; and practical

management in health and disease, and the principles and practice of horse-shoeing, should be thoroughly inculcated. It would be most advantageous if, when this course is adopted, farriers could be prevailed upon to attend; and if, after due examination as to their competency to practice their art in a rational manner, they were to receive certificates of proficiency, these certificates carrying with them advantages similar to those that the diploma of surgery confers upon the surgeon.

M. A. PICHÉ,
Veterinary Surgeon, First Cavalry.

BOOK NOTICES AND EXCHANGES.

I MARRIED A SOLDIER. By Lydia Spencer Lane.

The foregoing is the title of a most entertaining narrative of the personal experiences of the writer. Those who endured the hardships of the early days of the "Old Army" will, no doubt, read it with great interest, as being a history which, with slight alterations of time and place, might be their own. Those who have not done so can, from this small volume, acquire an excellent idea of army life and surroundings in those troublous times that tried the souls, and the bodies also, of all concerned.

The author is the wife of a gallant officer, now retired, who served his country from the British line to the "Halls of the Montezumas," and her excellent opportunities for observation evidently were not neglected.

Everyone, without regard to vocation, can read this book with pleasure, and some can do so with profit. That very small class of our readers who are not quite satisfied with existing conditions, may do both.

THE FIRST MAINE BUGLE.

This is the title of a very readable magazine published by the survivors of the First Maine Cavalry, one of those splendid regiments whose practice has since been reduced to precept, and is today taught on both sides of the Atlantic.

The object of the magazine is to publish the proceedings of the annual reunions of the regiment, matters of historic value to the same, and items of personal interest to the members. It is also the official organ of the "Cavalry Society of the United States," and publishes its proceedings.

Its articles are all contributed by members of cavalry regiments which participated in the War of the Rebellion. While most of them refer more or less to the "late unpleasantness," yet this is not by any means exclusively the case; and they all seem to be pervaded by that tone of candor and moderation which is usually noticeable in the writings of those who fought when there was fighting to be

done, and are under no necessity of displaying their prowess in time of peace.

All its articles are well written and interesting and some of them are handsomely illustrated. We note especially "The Bugler," a poem by our old friend, Mr. Henry T. Bartlett.

MILITAER-WOCHENBLATT.

No. 71: The New Drill Regulations for Field Artillery. Target Ranges at Paris, France. Insignia for and Classification of Gunners—Switzerland. No. 72: Testing and Examination of Iron and Steel, and Their Use for Military Purposes. No. 73: Drilling the Battalion in Conformity to the Drill Regulations for Infantry. The Marine Corps at the Autumn Maneuvers. Testing and Examination of Iron and Steel, and Their Use for Military Purposes (continued). No. 74: Changes in the Regulations for the Reserve—Switzerland. March of a Cavalry Regiment. Testing and Examination of Iron and Steel, and Their Use for Military Purposes (conclusion). No. 75: The Cadet Corps During the Reigns of the Emperors William I, Frederick III and William II. No. 76: Armor Plate Trials in the United States. The English Battle Ship "Thunderer." The Cavalry Horse in North America. No. 78: Battle at Mont Mesley, November 30, 1870. No. 79: Letters of General Field Marshal, Count Helmuth von Moltke. Battle at Mont Mesley, November 30, 1870 (continued). No. 80: Maneuvers of the Fourteenth Army Corps. Volunteer Service in the Colonial Forces—France. Promotion of the Officers of the Reserve—Italy. Battle at Mont Mesley, November 30, 1870 (conclusion). No. 83: Training and Equipment of the Reserve—France. Use of the Bayonet in the Russian Army. No. 85: Military Sketch from the Theatre of War at Atjeh. Disappearing Armor Turret. No. 86: Transfer of the Staff of the Nineteenth Cavalry Brigade. The Art of Riding and Its Importance to the Army. No. 88: French Societies for the Training of Nurses for Time of War. Cavalry Officers of the Territorial Reserve—Italy. The Russian Fleet. No. 89: Target Practice with Different Small Arms in the Fourteenth Army Corps. Review of the Latest Technical and Military Inventions and Discoveries. Purchase of Forage for Cavalry Horses. Maneuvers with Ball Cartridges at Waschaw. No. 90: Target Practice with Different Small Arms in the Fourteenth Army Corps. Review of the Latest Technical and Military Discoveries and Inventions (conclusion). No. 91: Equipment and Training of the Reserve—Switzerland. Military Society at Berlin. Brief Sketch of Lieutenant-General Müller. No. 93: Von Moltke's Tactical Examples. Military Academies—Italy. Fortification of Saint Maurice—Switzerland. No. 94: The Wars of the Future and Public Opinion. Von Moltke's Military Works. New Overcoat for Infantry—Austria. No. 95: Military Exhibit at the Geographical Exhibition—Moscow. Riding School for Officers at Rome. The Wars of the Future and Public Opinion (continued). No. 96: Practical and Theoretical Instruction of Non-commissioned Officers and Men as Railroad Engineers and

Firemen — Italy. The Wars of the Future and Public Opinion (continued). Some Suggestions Regarding the Drill Regulations for Infantry. Why Germany Must Increase Her Fighting Strength. No. 98: The Field Piece of the Future. No. 99: Volunteer Service in France. Age of Staff Officers and Captains in the French Army. No. 100: Railroad and Wagon Trains in the Next War. France's Views on the Military Situation of Germany. Kriegsspiel. Distribution of Bible Texts in the German Army and Marine Corps. Marine Artillery Regiment in France. No. 101: Railroad and Wagon Trains in the Next War (conclusion). Result of the Recent Examination for Promotion of Captains.

REVUE DU CERCLE MILITAIRE.

No. 36: The Technical Troops of Austria-Hungary. First Combats of the Army of the Rhine (continued). The Swiss Army in 1891 (completed). Passage of Rivers, by Cavalry, on Improvised Bridges. The Two Years' Service in Germany. No. 37: The Dandetean Gun, Caliber 6.5 Millimetres. Russian Naval Maneuvers of 1892. Technical Troops of Austria-Hungary (completed). Maneuvers of Cüxhaven. Calling Out Troops in Belgium. The New Law for Recruiting in Spain. The New Ration in Italy. Militia of the Seventh Italian Army Corps. No. 39: The Chinese Army of the Green Standard. The Divisions of Reserve in the Maneuvers of 1892. The Military Casino of Vienna. The Smokeless Powders of Troisdorf and Wetteren. Reorganization of the Spanish Army. Swiss Artillery of Position on the Summit of Gorschen. No. 40: The Chinese Army of the Green Standard (continued). The Divisions of Reserve in the Maneuvers of 1892 (continued). The Military Casino of Vienna (completed). Official Interpreters in Germany. No. 41: The Minister of War and the Landwehr in Austria-Hungary. The First Combats of the Army of the Rhine (continued). New Regulations for Italian Infantry. Composition of the Belgian Field Army. No. 42: The Divisions of Reserve in the Maneuvers of 1892. The Minister of War and the Landwehr in Austria-Hungary. The Austro-Hungarian War Budget for 1893. Changes in the Uniform of Italian Officers. No. 43: First Combats of the Army of the Rhine (continued). The Minister of War and the Landwehr in Austria-Hungary (continued). The Powder Factory of Santa Barbara in Spain. Preparatory Course at the Italian War College. Military Schools in Russia. No. 44: Letter of an English Officer on our Grand Maneuvers. The Proposed Military Law in Germany. The National Target Competition in Italy. No. 45: Impressions of the Maneuvers. Italian Mobilization. The War Budget of Holland for 1893 and the Position of Amsterdam. Projects of General Pelloux. Organization of Kurd Cavalry Regiments in Turkey. No. 46: The Chinese Army of the Green Standard (continued). Letters of an English Officer on Our Grand Maneuvers. Reorganization of Technical Troops in Austria-Hungary.

THE UNITED SERVICE. Hamersly & Co. 1892.

October: Methods of Marching, by H. R. Brinkerhoff, Captain Fifteenth Infantry. Some Yarns Spun by an Officer of the Old Navy, by D. B. Conrad, M. D. Europe in 1890–91 (continued), by S. B. Holabird, Brigadier-General, U. S. A. (retired). The Coming Revolution in Strategy and Tactics, by H. Elsdale. Lo — With an Attachment, by Albert Tracy, Brevet Colonel, U. S. A. November: Wanted — A Definite Policy, by C. H. Rockwell, Commander, U. S. N. Europe in 1890–91 (continued), by S. B. Holabird, Brigadier-General, U. S. A. (retired). The Last Great Roman, by Sir Herbert Maxwell. Torpedoes and Submarine Mines, by Frank L. Winn, Lieutenant, U. S. A. December: A Plea for Seamanship, by Charles H. Rockwell, Commander, U. S. N. A Cavalry Raid, by Albert G. Brackett, Colonel, U. S. A. (retired). Where Did Columbus First Land in 1492? by Henry A. Blake. The Plastoon Secret Detachment on the River Araks. The Guardian of Fort D'Albert, by Caroline Frances Little. Europe in 1890–91 (continued).

THE FIRST MAINE BUGLE.

No. 9: Twentieth Annual Reunion. After Appomattox (No. IV)— Fort Darling, by Major Henry C. Hall. Bowdoin Boys in Labrador, by Jonathan P. Cilley, Jr. The Bugler, by Henry T. Bartlett. The Country For Which You Fought (illustrated), by Edward P. Tobey. Beguiled by Chance, by a Comrade of the Regiment. Sketch of Our Regiment (illustrated), by George L. Kilmer. A Night With Mosby, by C. W. Wiles. One of Our Boys in the Sixth Massachusetts, by W. H. Luce. No. 10: The Country For Which You Fought (continued), by Edward P. Tobey. A Review — Poem, by Chaplain Frederic Denison. After Appomattox (No. V)—The Cow Case, by Major Henry C. Hall. Jim — Poem. Bowdoin Boys in Labrador (continued), by Jonathan P. Cilley, Jr. Number Four — Poem, by C. C. Hassler. Up the Shenandoah Valley and On to Appomattox, by General J. P. Cilley. A Skirmish at Little Auburn, Va., by C. W. Wiles.

JOURNAL OF THE ROYAL UNITED SERVICE INSTITUTION.

September: Magazine Rifles; Their Latest Developments and Effects, by Captain Walter H. James, R. E., F. R. G. S. Saddles, by Colonel Crichton, Hampshire Yeomanry. Color Blindness, by R. B. Carter, Esq. Torpedo-Net Defenses. The Military Situation in Upper Egypt. Cavalry Swimming. October: Colonel von Löbell's Annual Reports Upon the Changes and Progress in Military Matters During 1891. The French Naval Maneuvers. The Field Gun of the Future. November: The Lagos Expeditionary Force, 1892. German Divisional Cavalry. The Russian Navy. A Long Distance Ride. The Distance Ride from Berlin to Vienna. Experimental Aluminium Horse-Shoes.

THE PENNSYLVANIA MAGAZINE OF HISTORY AND BIOGRAPHY. October, 1892.

The Ancestry and Earlier Life of George Washington. Owen Biddle. Genealogical Gleanings Contributory to a History of the Family of Penn. Christopher Ludwig, Baker-General in the Army of the United States During the Revolutionary War. A Brief Account of the Swedish Mission From its Commencement Until Its Cessation. Extracts From the Orderly-Book of Captain John Nice, Thirteenth Pennsylvania Line.

JOURNAL OF THE MILITARY SERVICE INSTITUTION. November.

Guns and Forts, by Colonel King. Queries on the Cavalry Equipment, by Lieutenant Cole. Artillery Service in the Rebellion, by General Tidball. Water Supply in Desert Campaigns, by Lieutenant Beckurts. Skobeleff's Last Campaign, by Captain Clark. Recruiting Experiences, by Lieutenant Hawthorne. Our New Infantry Drill Regulations, by Lieutenant Crane.

PROCEEDINGS OF THE ROYAL ARTILLERY INSTITUTION.

No. 11: Fire Discipline; Its Necessity in a Battery of Horse or Field Artillery, and the Best Means of Securing It. Skill-at-Arms. Mountain Artillery Progress. Achievements of Field Artillery. No. 12: The United States Military Academy at West Point. Troop "I," R. H. Artillery, at Fuentes d'Onore. No. 13: Mounting Hydro-Pneumatic Disappearing Guns.

JOURNAL OF THE UNITED SERVICE INSTITUTION OF INDIA. August.

On Repairing and Constructing War Railways. The Most Effective Use That Can be Made of Signaling on a Modern Battle-Field. The Combined Tactics of Infantry and Artillery. The Revised Scheme for a Government Mule Farm in the Hills. The Penetration and Effects of Magazine Rifles.

THE NORTHWESTERN GUARDSMAN. Monthly. Portland, Oregon. October, 1892.

Report on Camp Murray. The Homestead Campaign. Commissary in the Field. Oregon National Guard. National Guard of Washington. Militia Appreciated. Well Deserved Criticism.

PROCEEDINGS OF THE UNITED STATES NAVAL INSTITUTE. No. 63.

First Aids to the Injured, and Transportation of the Wounded. Six Lectures Delivered to the Naval Cadets of the First Class, During the Winter of 1892, by Henry G. Beyer, M. D., Ph. D., M. R. C. S.

IOWA HISTORICAL RECORD. October, 1892. No. 4.

Governor James W. Grimes. The Talley War. Recollections of Indian Life on Old Man's Creek in 1840.

JOURNAL OF THE U. S ARTILLERY. No. 4.

Electricity and the Art of War. Recoil of Heavy Guns and Its Control. Demolition of Concrete Gun Platforms. Time Fuse With Shrapnel Fire.

THE WESTERN SOLDIER. Monthly. San Francisco. September, October and November, 1892.

OUR DUMB ANIMALS. Boston. October, 1892.

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